



Fastmark 4600 PLUS Series

Thermal Transfer Barcode Printer

User's Guide

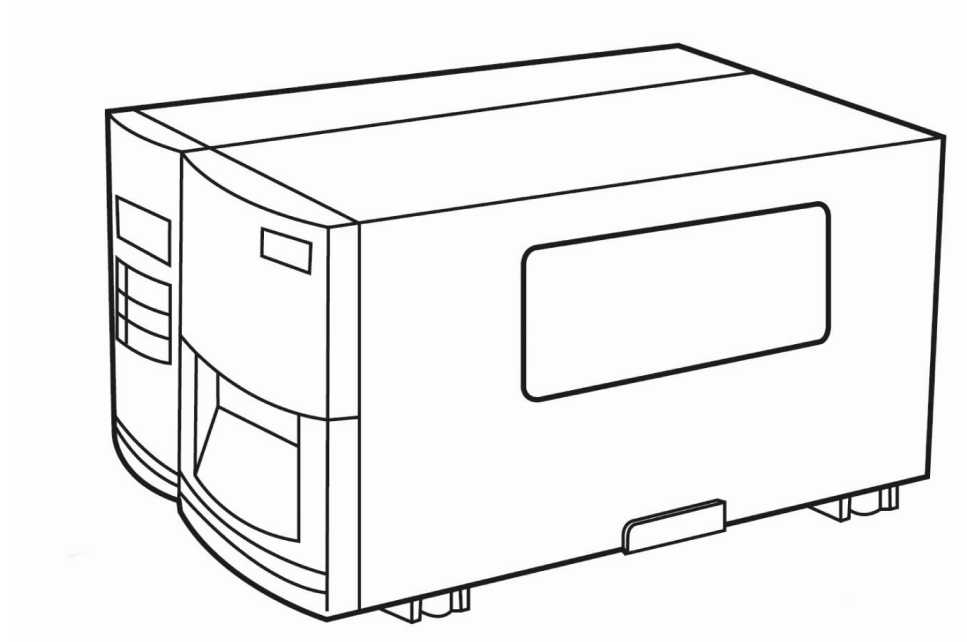


Table of Contents

Getting Started	2
Unpacking	2
Package Contents.....	3
Placing the Printer	4
Connecting the Power Cord	4
Getting to Know Your Printer	5
Front Panel.....	5
Loading a Ribbon	15
Loading Media	18
PAL™ Print and Program Overview	27
Traditional Printing.....	27
Legacy Data Stream Interpretation.....	27
Standalone/Downtime Applications	28
Calibration & Configuration	30
Performing Calibration.....	30
Printing a Configuration Report	31
Resetting to Factory Default Settings.....	32
Computer Connections	33
USB Interface Requirements	33
Centronics Parallel Port.....	33
Serial (RS-232) Port	34
Ethernet 10/100 Internal Printer Server Option	34
Ethernet Module Status Indicators.....	35
Communicating with the Printer.....	37
Troubleshooting.....	44
LED and LCD Diagnosis.....	44
Media Problems	44
Ribbon Problems	45
Other Problems.....	45
Light /Missing Print	46
Miscellaneous	47
Recovery	48
Caring for Your Printer	49
Cleaning the Print Head	49
Cleaning the Roller	50
Cleaning the Media Compartment.....	50
Technical Reference	51
General Specifications	51
Fonts, Bar Codes and Graphics Specification	54
Interface Specifications	57
ASCII TABLE	63

Table of Contents

Appendix A: Printer Status	64
Appendix B: Stand-alone Keyboard and Barcode Reader	65
Keyboard	65
Form Control Functions.....	65
Barcode Reader	69
Appendix C: Cutter Installation	72
Appendix D: Dispenser Installation.....	75
Appendix E: Adjusting Ribbon Tension.....	78
Appendix F: Switching Ribbon Wound Ink-side out or Ink-side in.....	78

IMPORTANT SAFETY INSTRUCTIONS AND OTHER NOTICES

- This printer complies with the requirements in Part 15 of FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interface to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.
- Place the printer on a flat, firm and solid surface.
- Do not place the printer near a heat source or near water.
- Refer to the specification label on the bottom of this printer and ensure that your power source exactly meets these requirements.
- Do not open the printer during operation to avoid electrical shock.
- Do not attempt to disassemble this printer if it malfunctions.
- All rights are reserved. No part of this document may be reproduced or issued to third parties in any form without permission of AMT Datasouth.
- The material in this document is provided for general information and is subject to change without notice.

TRADEMARK CREDITS

Windows ® , MS-Word and MS-DOS are registered trademarks of Microsoft Corporation

PC ® is a registered trademark of International Business Machines

Centronics ® is a registered trademark of Centronics Corporation

PAL[™] is registered trademark of AMT Datasouth Corporation

Getting Started

Congratulations on choosing the AMT Datasouth Fastmark 4600 PLUS Series industrial barcode printer. This user's manual describing the FM 4600 PLUS Series printer models will help you get to know your new printer. The manual includes a guide to operate the printer as well as related information on troubleshooting, maintenance, and technical reference. Illustrations are provided to help you quickly become familiar with the printer.

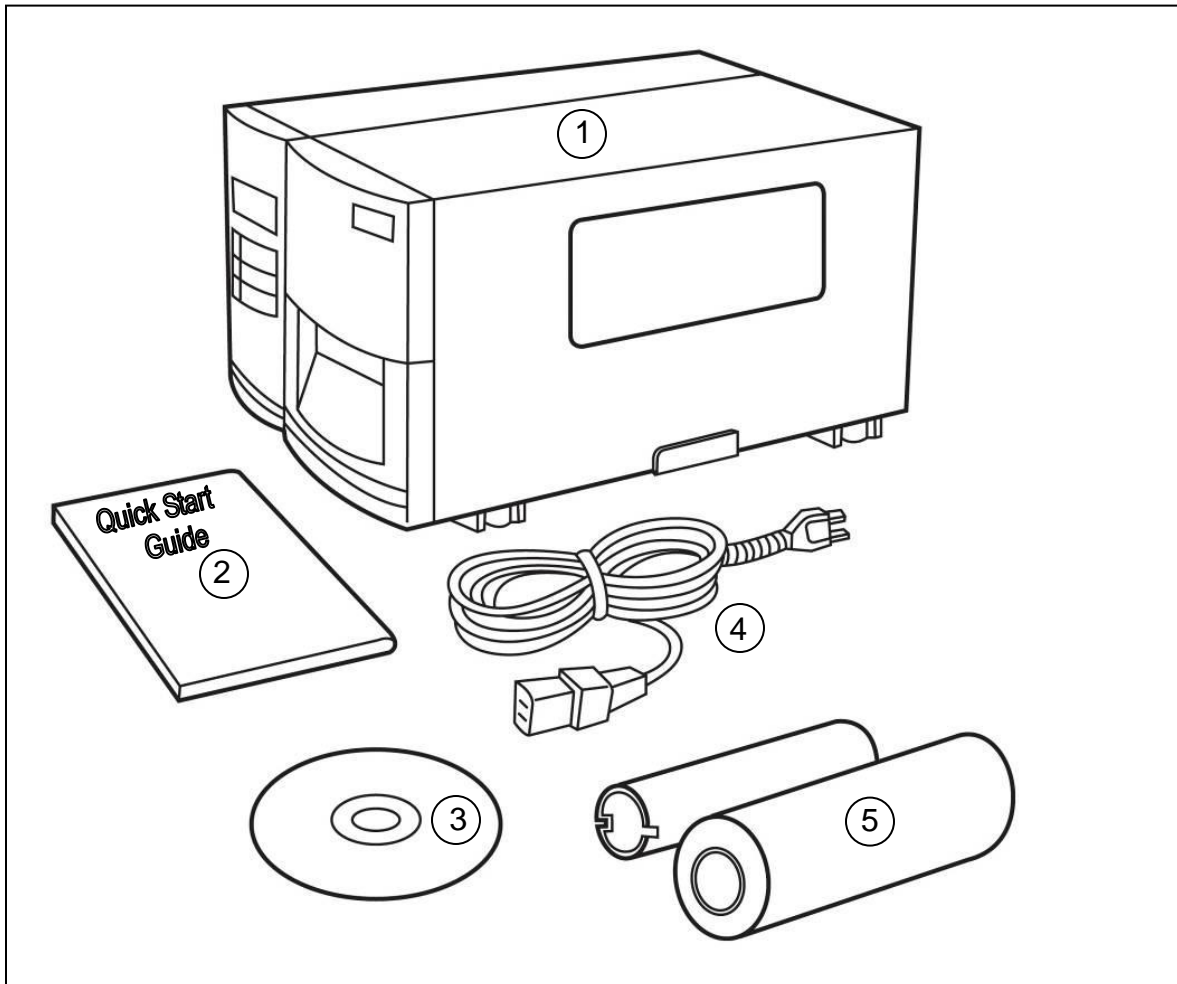
Unpacking

After receiving your printer, please check for possible shipping damage:

1. Inspect the outside of both the box and the printer for possible damage.
2. Open the top cover of the printer to see if the media compartments are in order.

Note: If damage has occurred, contact your shipping company immediately to file a claim.

3. Check whether you have received the following accessories together with the printer. If there are any items missing, please contact your local dealer.



Package Contents

1. 4600 PLUS Series Printer
2. Installation Quick Start Guide
3. CD Rom (User Guides, Utility Software & Drivers)
4. AC Power Cord
5. Sample Ribbon

Placing the Printer

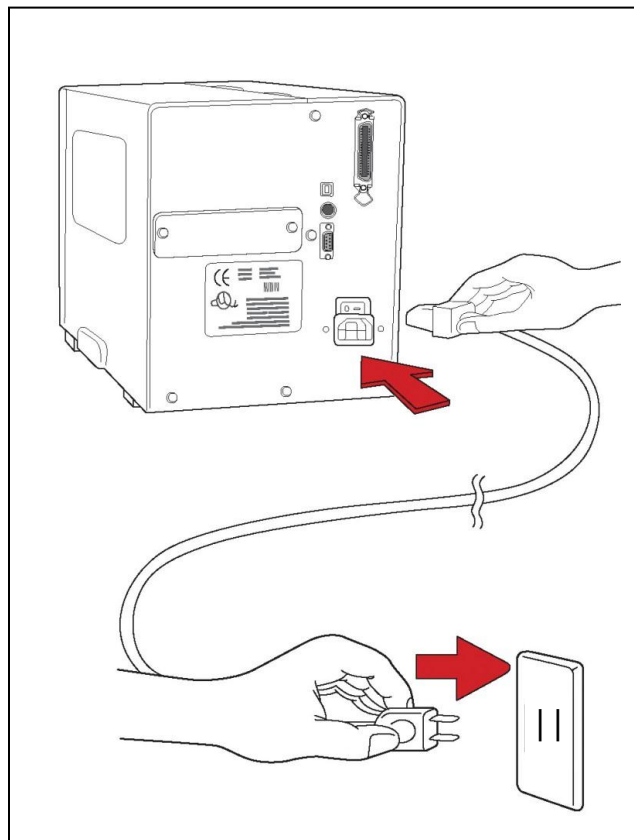
Before setting up and connecting the printer you should consider the following.

WARNING! Do not operate the printer in an area where it might get wet.

- Find a solid flat surface with adequate room for the printer and enough space above for media and ribbon access.
- Place the printer within cable distance of the host and printer (serial or parallel cable.)
- Isolate the power cord from other electrical cables.

Connecting the Power Cord

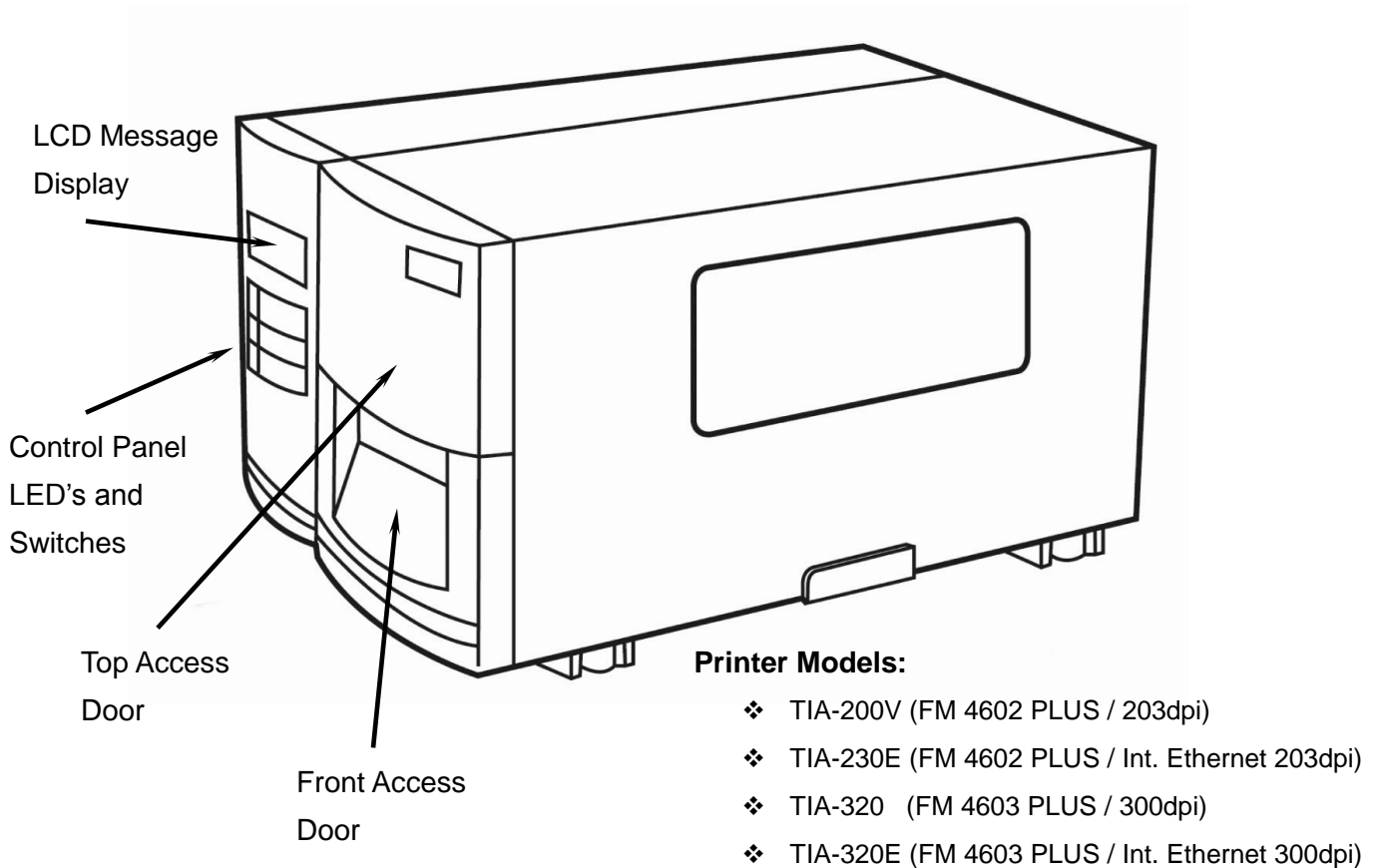
Connect the power cord as below.



Getting to Know Your Printer

The illustrations below describe parts and features of the FM 4600 PLUS Series printer.

Front Panel



The front panel includes:

- 3 LED indicators (READY, MEDIA and RIBBON)
- 3 buttons (FEED, PAUSE and CANCEL)
- LCD display
- Top Access Door
- Front Access Door

LED Indicators

There are three LED indicators on the front panel, READY, MEDIA and RIBBON. These indicators display the operation status of the printer.

READY	On – Normal operation Off – Printer error
MEDIA	On – Normal operation Blinking – Install new media Printhead overheat The printer is paused,
RIBBON	On – thermal transfer mode with ribbon installed Off – direct thermal mode (no ribbon installed) Blinking – Install a new ribbon <i>For the FM 4602 PLUS Series, and the FM 4603 PLUS Series models, modes of thermal transfer and direct transfer can be set via the printer panel or Utility software.</i>

Buttons

There are three buttons, each with two basic functions.

Button	Function 1 (Press the button)	Function 2 (Press the button and power switch together)
FEED/ CONFIG	<ul style="list-style-type: none">• Feed a label	<ul style="list-style-type: none">• Perform self test & print configuration report
PAUSE/ CALIBR	<ul style="list-style-type: none">• Pause printing• Press again to resume printing	<ul style="list-style-type: none">• Perform a media calibration
CANCEL/ RESET	<ul style="list-style-type: none">• Interrupt and delete a print task• Force printer to continue after an error is solved.	<ul style="list-style-type: none">• Reset FLASH settings

Notes:

1. You should perform a media calibration after installation and when changing to a different type or size of media.
2. Before calibration, you must load the media and ribbon properly and move the label sensor to the correct position avoiding holes.
3. After calibration the printer saves parameters to FLASH. Without correct calibration gap detection is easily lost during printing especially for small labels (less than 1.5 inches in height).
4. After self-test, the printer is in dump mode. For normal operation, you must press CANCEL to restart the printer.

LCD Display

The FM 4600 PLUS Series models have a LCD that shows:

- printer status
- printer settings
- input data from a keyboard or barcode reader

The first parameter is either 203 or 300, which stands for the print resolution. The second parameter indicates the emulation (printer language), PAL/PPLZ, PPLA, or PPLB.

After power-on, the LCD displays the following message as examples:

FM 4602 PLUS Series

(203, PAL/PPLZ)

FM 4603 PLUS Series

(300, PAL/PPLZ)

If a keyboard is plugged in, the display shows:

FM 4602 PLUS Series

(203, PAL/PPLZ)
<ESC> FOR KEYBD

FM 4603 PLUS Series

(300,PAL/PPLZ)
<ESC> FOR KEYBD

If a barcode reader is connected, the display shows:

FM 4602 PLUS Series

(203,PAL/PPLZ)
WITH B.C. READER

FM 4603 PLUS Series

(300,PAL/PPLZ)
WITH B.C. READER

If an abnormal condition occurs, a related message is displayed. For example:

RIBBON OUT

Setting Display Language

The printer's LCD display supports six languages: English, French, German, Italian, Spanish, and Portuguese.

To select a language:

1. Press the PAUSE and CANCEL buttons at the same time.
2. Hold both buttons for about 3 seconds and release.
3. The language selection screen appears.

LANGUAGE
ENGLISH

4. Press the FEED button for the next language.
5. Press the CANCEL button to select and set the language.

Press PAUSE or the PAUSE+CANCEL buttons to exit the language selection screen and enter normal mode.

Changing Settings from the Panel

You may change settings using the front panel buttons of the 4600 PLUS series printer models. In addition you may also change settings via software Utility and data stream commands.

Buttons	Function
FEED+PAUSE	Press to enter setting mode. (Don't press over 1 second)
FEED+CANCEL	Press to show next features.
CANCEL	Press to select desired feature.
FEED+CANCEL	To scroll through the list of values for the chosen feature.
CANCEL	To save the currently displayed value.
PAUSE	To exit setup mode.

Setting Procedure:

To change settings using the buttons on the front panel:

1. Press PAUSE, verify mode on LCD display.
2. Press **FEED** and **PAUSE** at the same time to enter setup mode.
3. Press and hold **FEED**, use **CANCEL** to scroll through the list of features.
4. Press **CANCEL** to select desired feature.
5. Press and hold **FEED**, use **CANCEL** to scroll through the list of values for the chosen feature.
6. Press **CANCEL** to save the currently displayed value.
7. Press **PAUSE** twice to exit setup mode and READY the printer.

Basic Printer Features and Parameter Settings , PPLA/PPLB.

NOTE: Features can vary based on printer model. Do not change settings during printing or communication.

Feature	Parameter	Factory Default	Remarks
PRINT MODE	Thermal transfer / Direct thermal	Thermal transfer	
AUTO CALIBRATE MODE	Mode 1~4	Mode 1	Calibrates on demand.
CUT/PEEL OFFSET	-015 ~+.050	0	Controls cut and peel position.
TPH VERTICAL OFFSET	-.003~+.003"	0	Offset of vertical print position.
RECOVER PRINT	ENABLED, DISABLED	ENABLED	Contents reprint after media out or ribbon-out.
CUTTER INSTALLED	YES NO	NO	
PEELER INSTALLED	YES NO	NO	
READER INSTALLED	YES NO	NO	
WIN. CON. LIN.	0~254	0	Only under Windows with bundled printer driver and continuous media.
BASE SEED	0~4 ips	0 ips	
COUNTING DOWN	UP DOWN	DOWN	
MEDIA SENSOR TYPE	GAP BLACK BAR	GAP	Select for media characteristics. Once changed make sure to calibrate before printing.
BACKFEED	ENABLED DISABLED	DISABLED	
PRESENT DISTANCE	.0~.040"	.87"	Appears only when BACKFEED enabled.
BASE DARKNESS	-028~+028	0	
BAUD RATE (RS232)	600 / 1200 / 2400 / 4800 / 9600 / 19200 / NONE	9600	

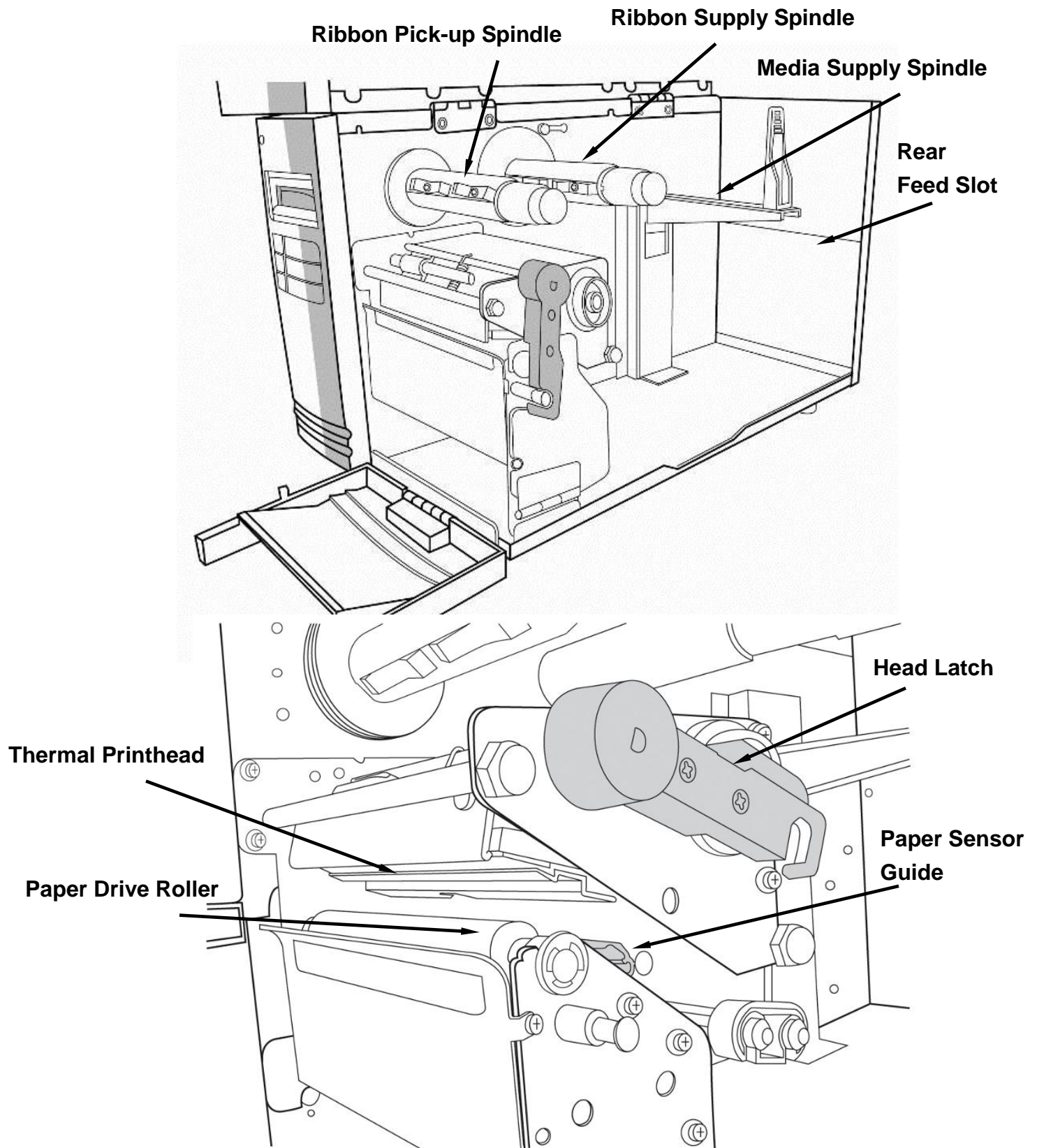
Feature	Parameter	Factory Default	Remarks
PARITY (RS232)	NONE EVEN ODD	NONE	
LENGTH (RS232)	8 DATA BITS 7 DATA BITS	8 DATA BITS	
CLEAR FLASH	YES/NO	NO	
PRINTERS WITH ETHERNET			
DHCP	ENABLE DISABLE	ENABLE	
IP ADDRESS	###.###.###.###		
SUBNET MASK	###.###.###.###		
DEFAULT GATEWAY	###.###.###.###		
MAC ADDRESS	#####.#####.#####		

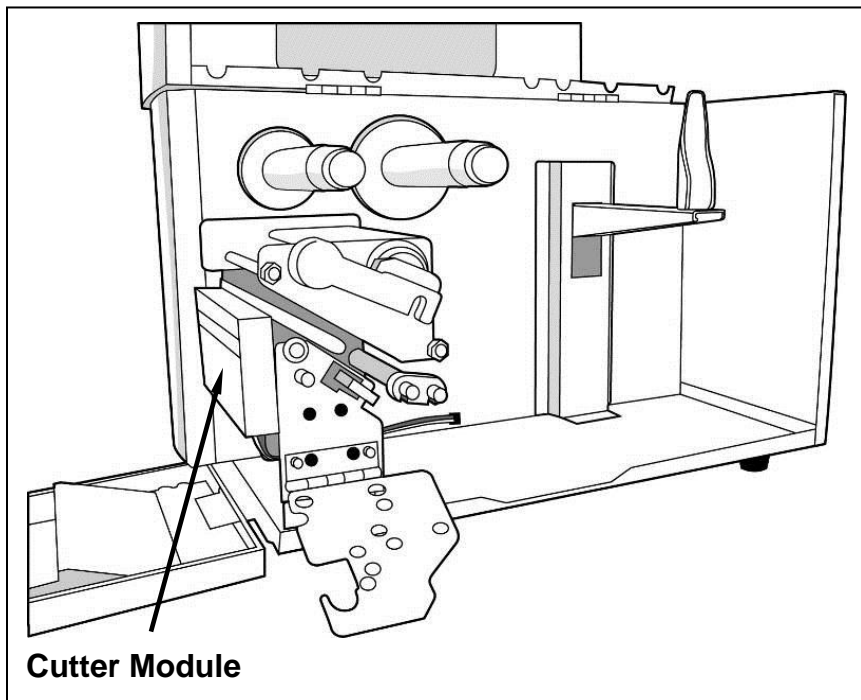
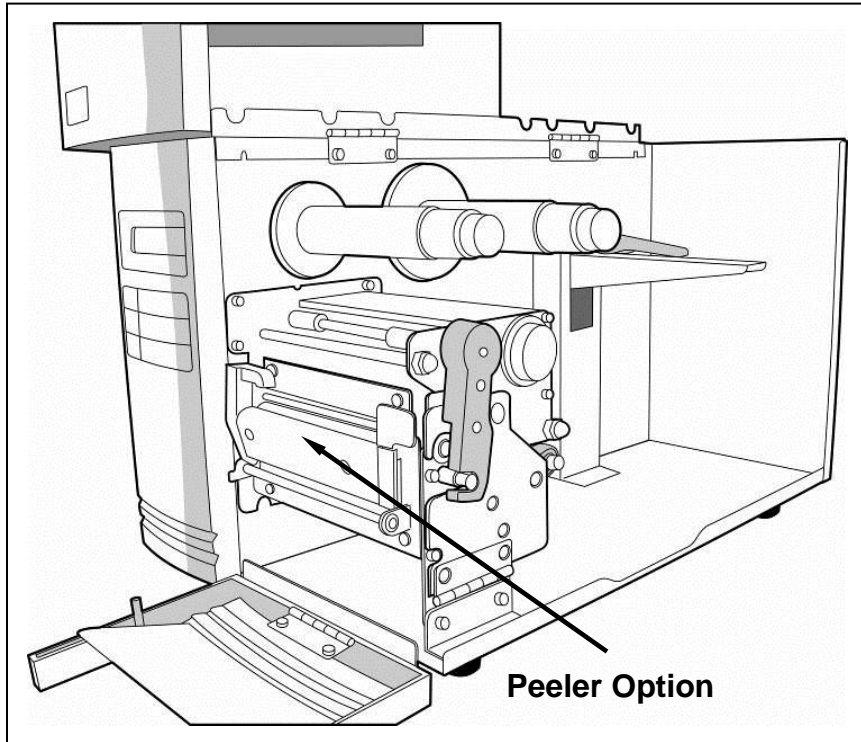
Printer Features and Parameter Settings, PAL/PPLZ

Feature	Parameter	Factory Default	Remarks
PRINT MODE	Thermal transfer / Direct thermal	Thermal transfer	
AUTO CALIBRATE MODE	Mode 1~4	Mode 1	Calibrates on demand.
CUT/PEEL OFFSET	-015 ~+.050	0	Controls cut and peel position.
TPH VERTICAL OFFSET	-.003~+.003"	0	Offset of vertical print position.
RECOVER PRINT	ENABLED, DISABLED	ENABLED	Contents reprint after media out or ribbon-out.

Feature	Parameter	Factory Default	Remarks
PEELER INSTALLED	YES NO	NO	
COUNTING	UP DOWN	DOWN	
MEDIA SENSOR TYPE	GAP BLACK BAR	GAP	Select for media characteristics. Once changed make sure to calibrate before printing.
PRESENT DISTANCE	.0~040"	.87"	Appears only when BACKFEED enabled.
ABS DARKNESS	0~30	0	Setting darkness
TRIM DARKNESS	-30~30	0	Fine-tuning darkness
BAUD RATE (RS232)	600 / 1200 / 2400 / 4800 / 9600 / 19200 /NONE	9600	
PARITY (RS232)	NONE EVEN ODD	NONE	
LENGTH (RS232)	8 DATA BITS 7 DATA BITS	8 DATA BITS	
CLEAR FLASH	YES/NO	NO	
PRINTERS WITH ETHERNET			
DHCP	ENABLE DISABLE	ENABLE	
IP ADDRESS	###.###.###.###		
SUBNET MASK	###.###.###.###		
DEFAULT GATEWAY	###.###.###.###		
MAC ADDRESS	####.####.####		

Internal Parts and Features





Loading Ribbon and Media

This section describes how to load ribbon and media.

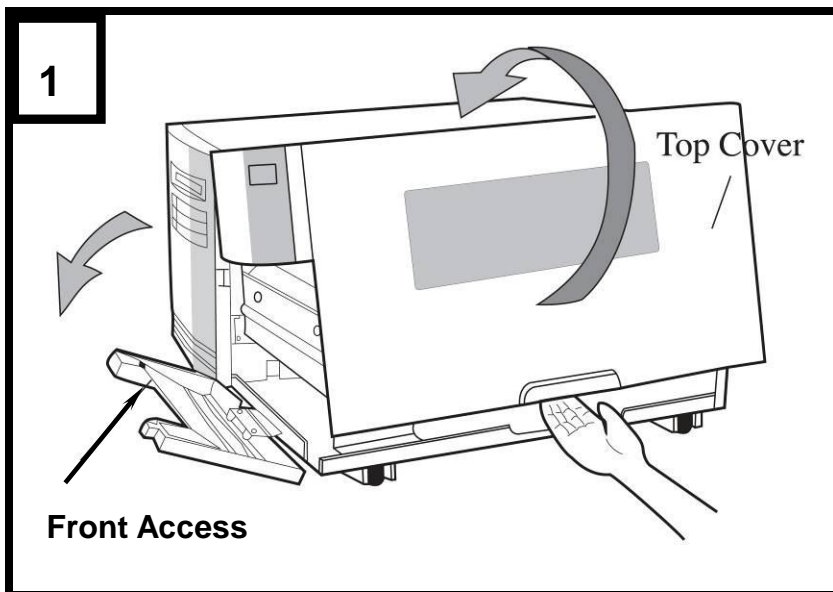
Loading a Ribbon

Note: This section can be referred to, when transfer thermal printing is used.

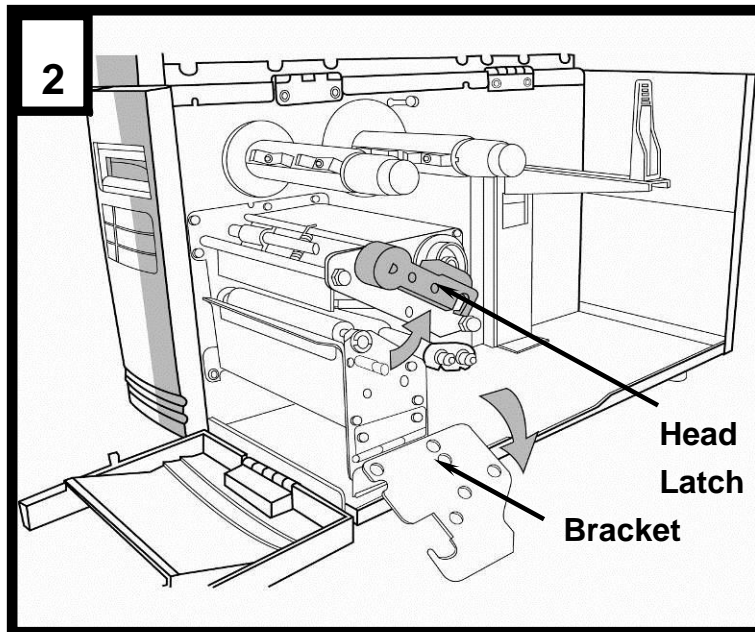
The steps below are based on ribbon wound ink-side in as an example.

1. Lift the top cover and front access door to expose the media compartment.

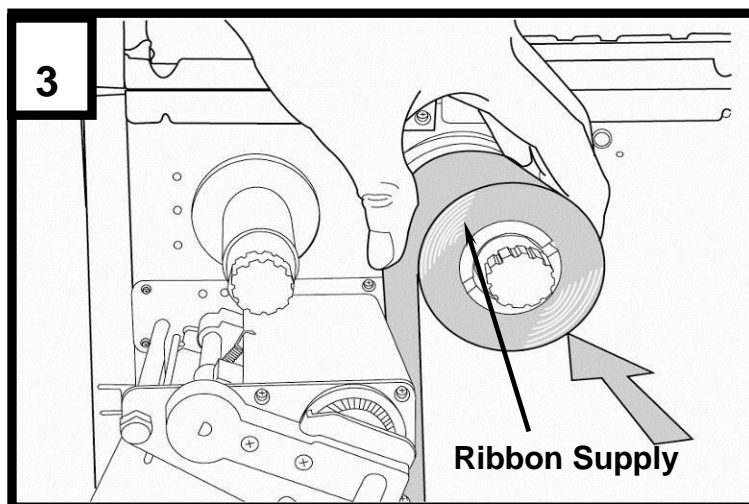
(Figure 1)



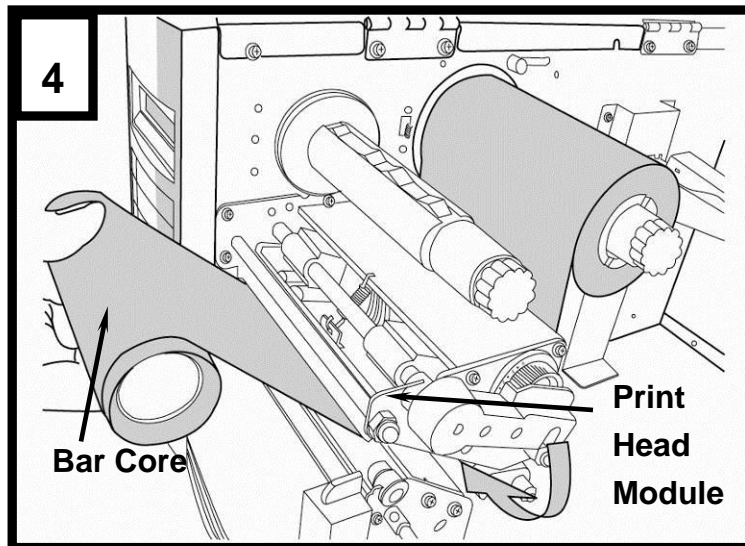
2. Turn the head latch counter-clockwise and open the bracket. (Figure 2)



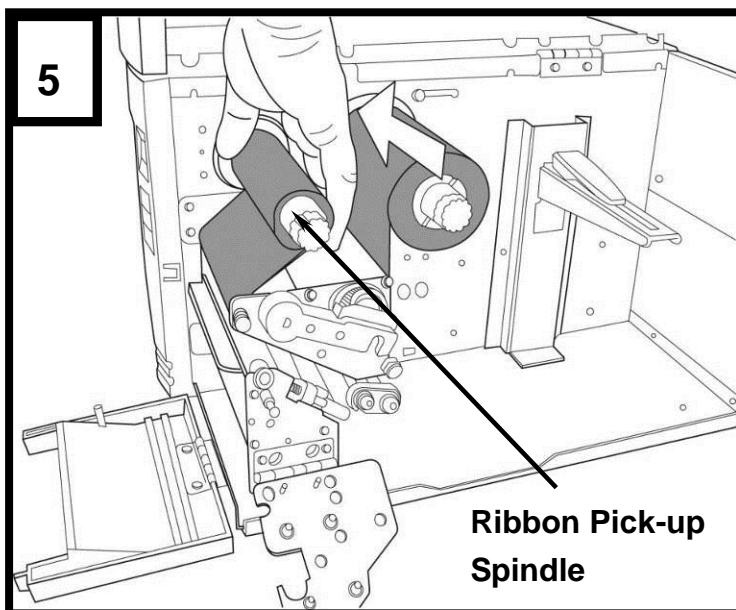
3. Unwrap the ribbon and separate the ribbon roll from the bare core. Insert the ribbon roll onto the ribbon supply spindle. (Figure 3)



4. Lead the ribbon through the print head module. (Figure 4)
5. Attach the edge of the ribbon onto the bare core and wind it a bit onto the core. Make sure the coating side of the ribbon is face down.



6. Insert the core onto the ribbon pick-up spindle. (Figure 5)



7. Turn the pick-up spindle to ensure the ribbon is tightly wound.

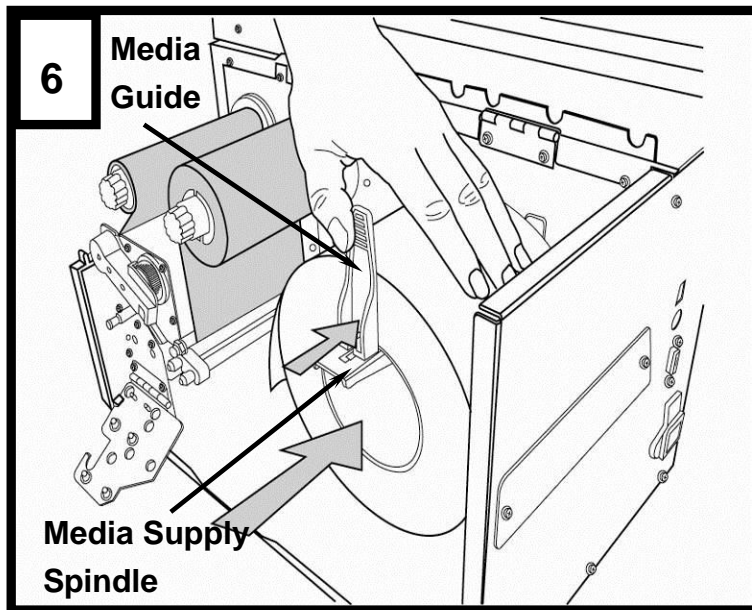
Loading Media

The 4600 PLUS series printers offer three different loading modes: standard, peel-off, or with a cutter.

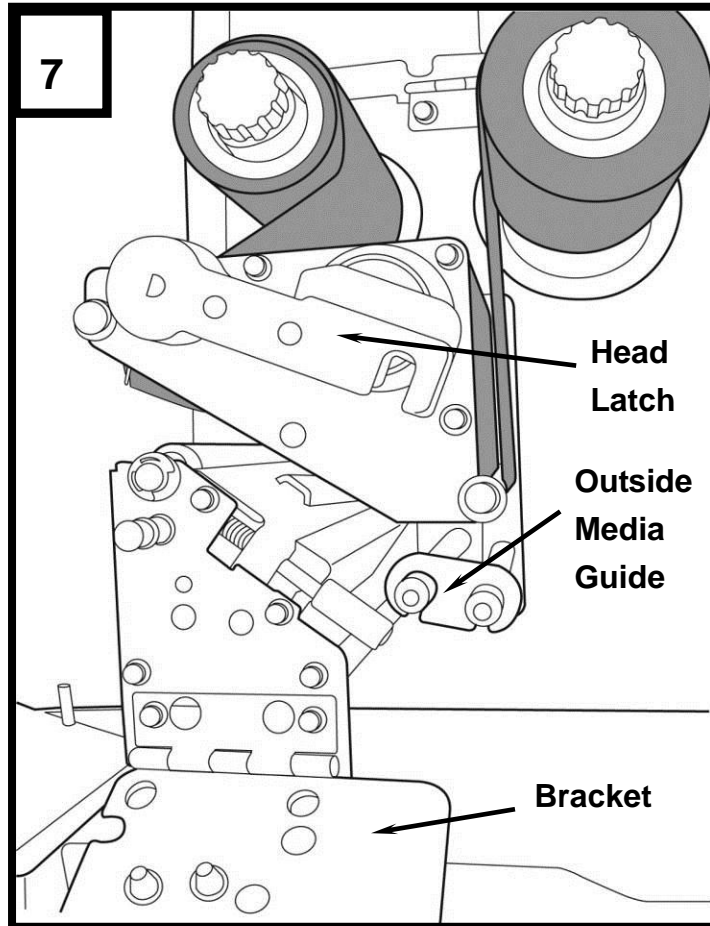
- Standard mode allows you to collect each label freely.
- Peel-off mode peels backing material away from the label as it prints. After the label is removed, the next label prints.
- Cutting mode automatically cuts the label after it prints.

Standard Mode

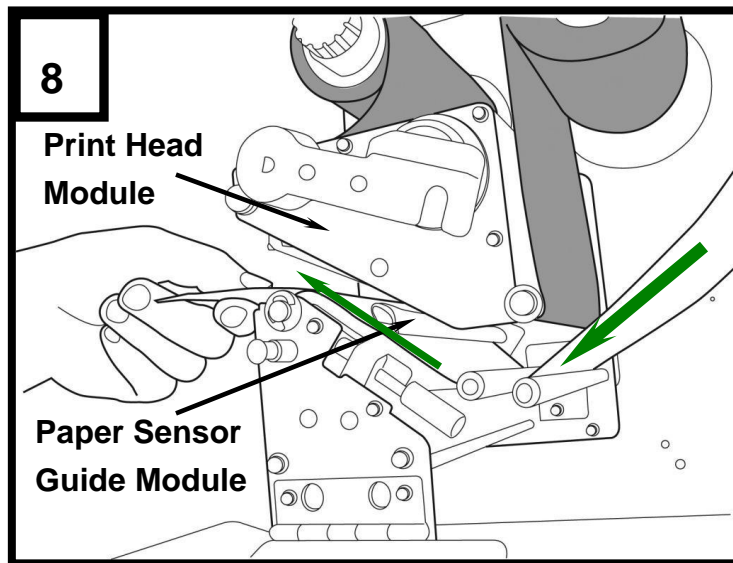
1. Insert the media roll into the media supply spindle and move the media guide to the inside. (Figure 6)



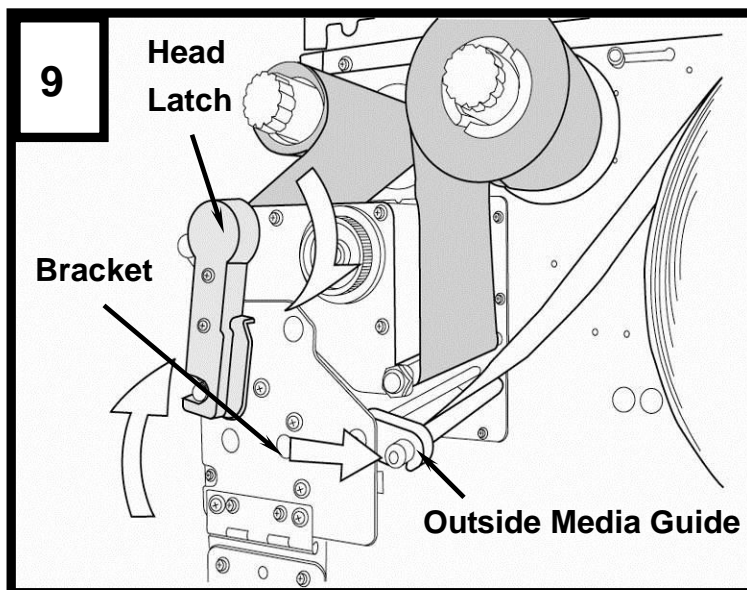
2. Turn the head latch counter-clockwise and open the bracket. Remove the outside media guide. (Figure 7)



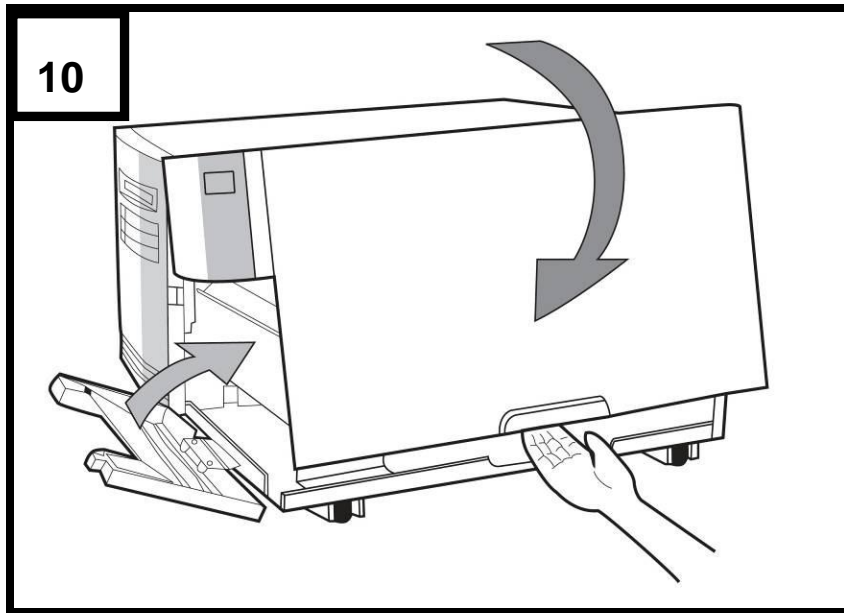
3. Lead the media through the print head module and under the paper sensor guide. (Figure 8)



4. Return the outside media guide, close the bracket, and hook the head latch. (Figure 9)



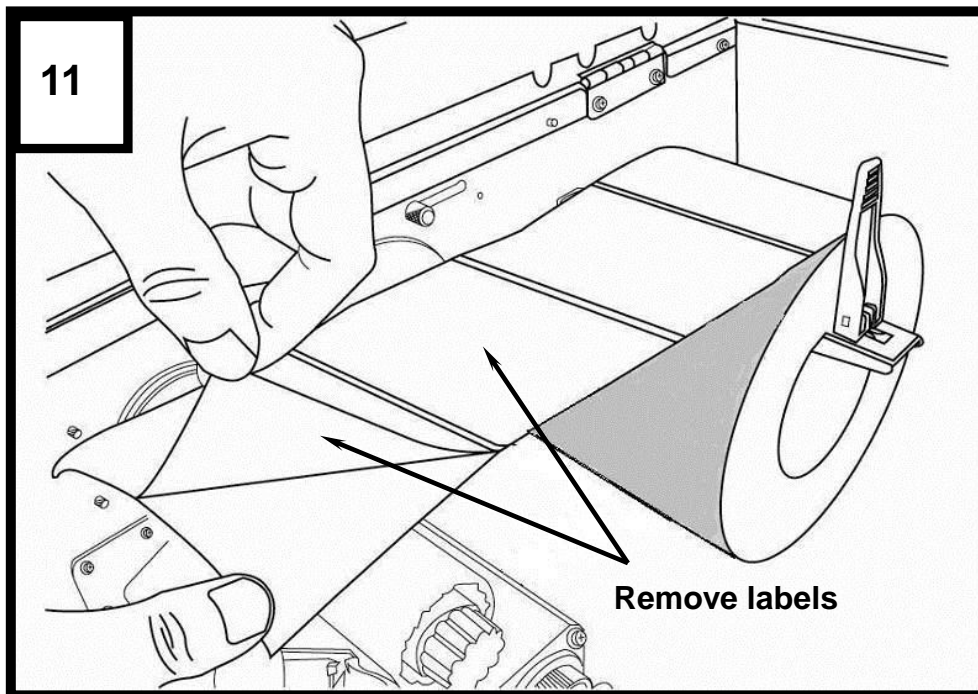
5. Close the top cover and the front access door and turn on the printer, or press the “FEED” button if the printer is already on. (Figure 10)



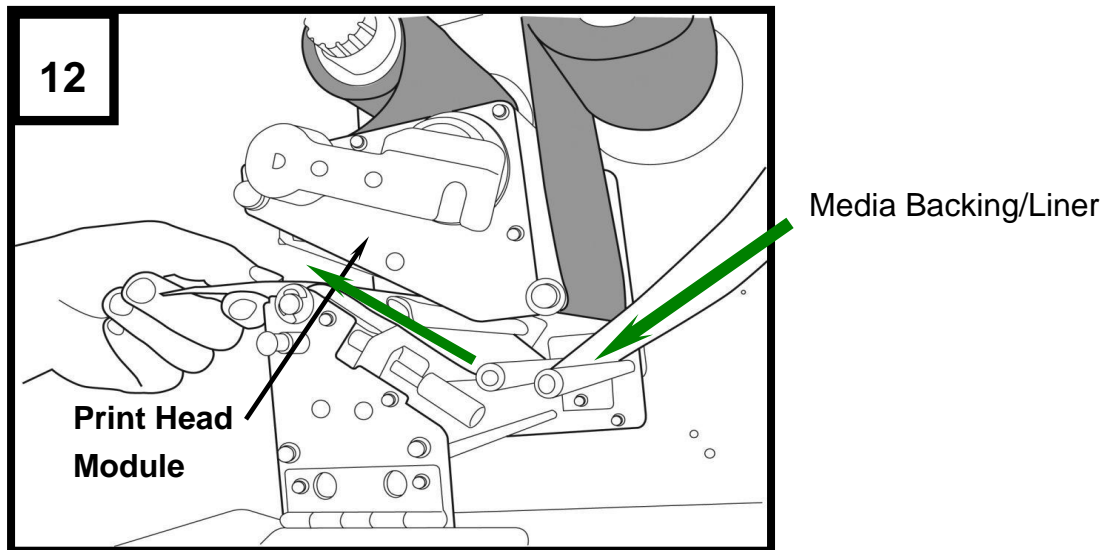
Peel Off Mode

Follow steps 1 to 3 in “Loading the Media – Standard Mode” above.

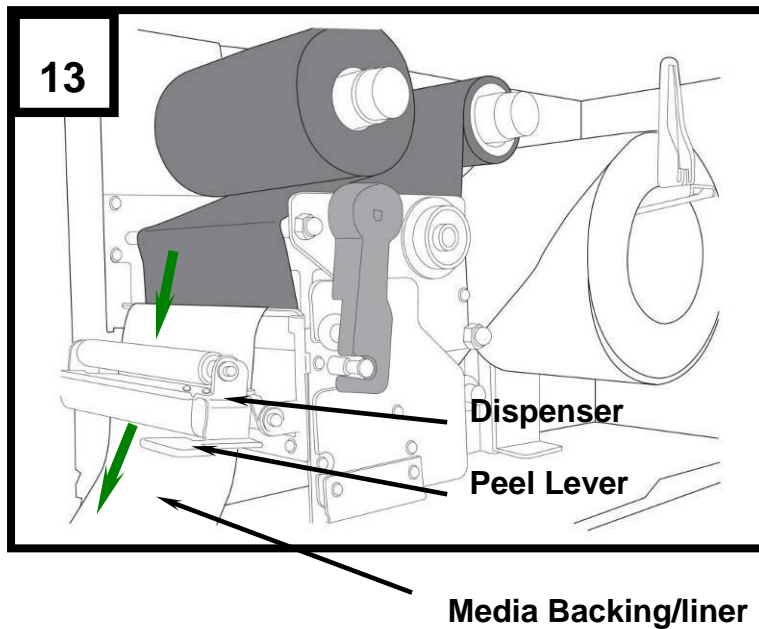
1. From the leading end of the media roll remove enough labels to expose 6-inches of backing/liner. (Figure 11)



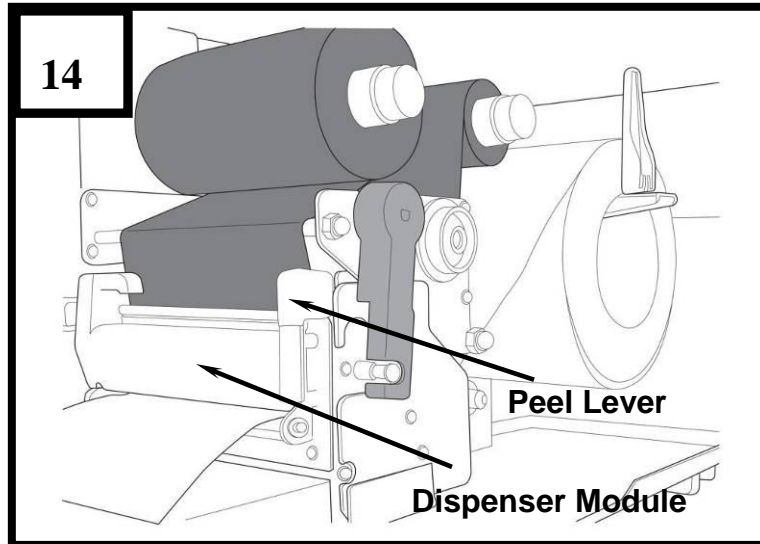
2. Lead the media backing/liner through the print head module. (Figure 12)



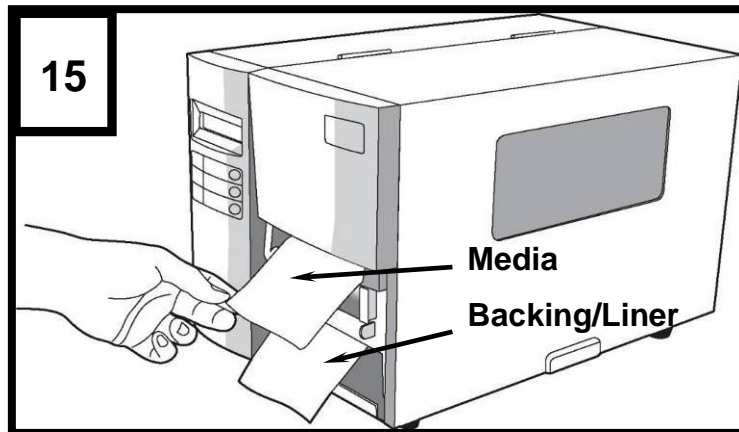
3. Push down the peel-off mechanism release lever and lead the media backing/liner under the peeler module. (Figure 13)



4. Close the peeler module using the peel-off mechanism release lever.
(Figure 14)



5. Close the top access door and turn on the printer or press the FEED button if the printer is already on. (Figure 15)



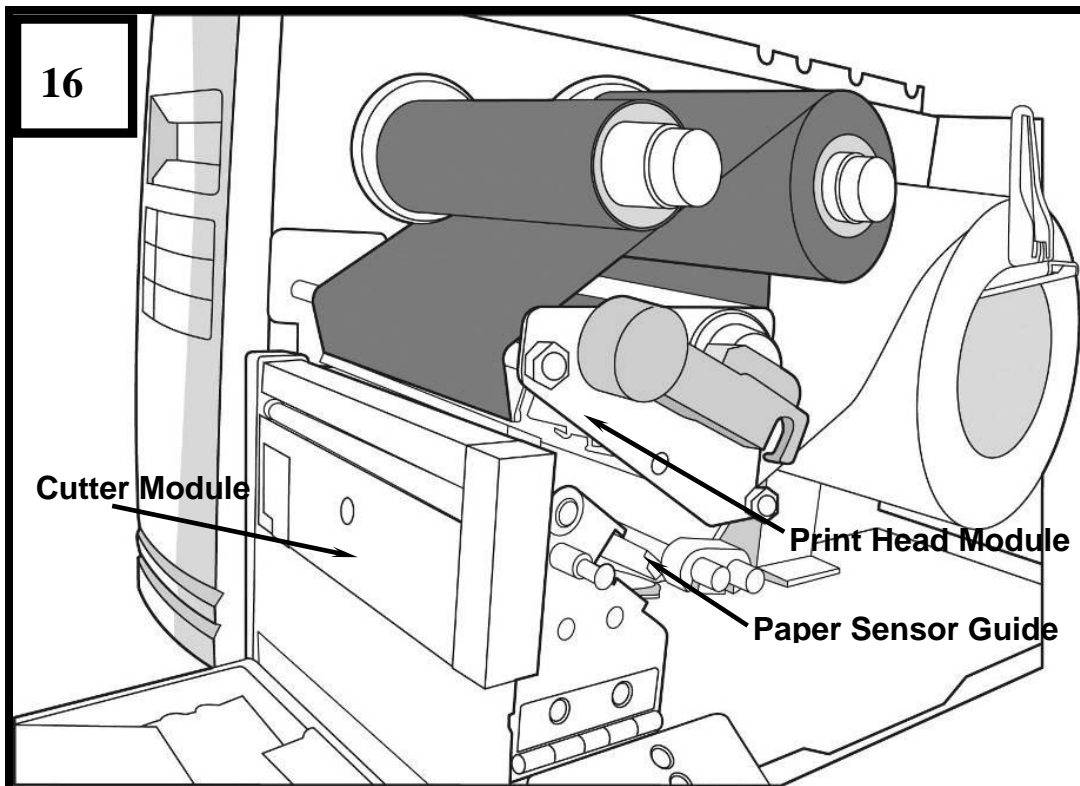
Notes:

- ❖ The FEED button does not make the printer peel. For peeling to occur when the panel setting is properly enabled.
- ❖ Make sure the peeler sensor is out of the ribbon path when installed.

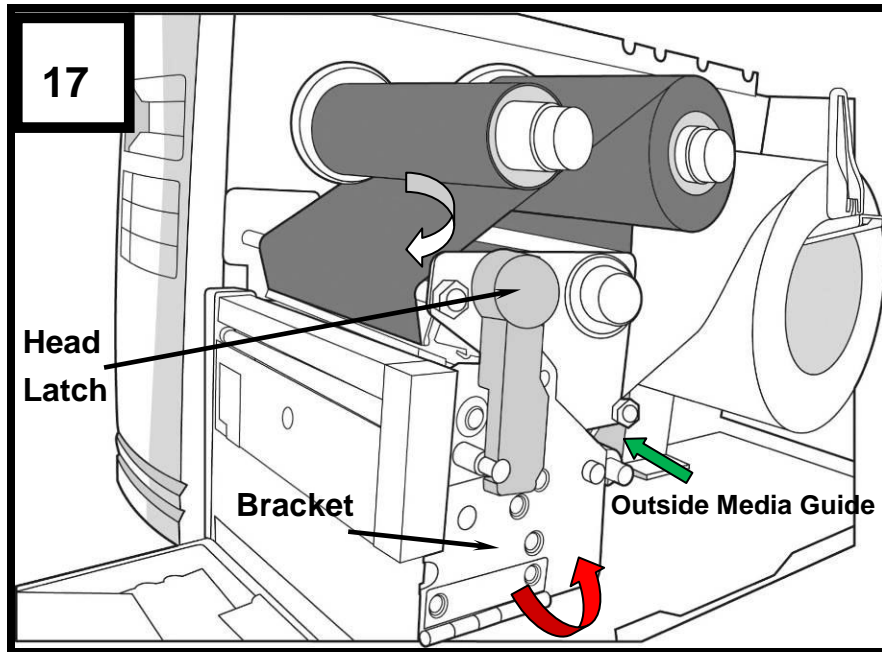
Cutting Mode

Follow steps 1 to 3 in “Loading the Media – Standard Mode” above.

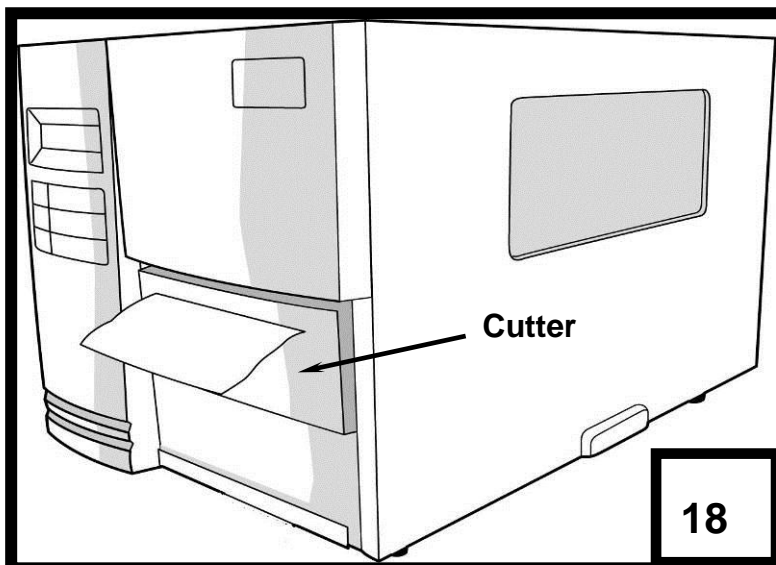
1. Insert the media into the print head module and under the paper sensor guide. (Figure 16)



2. Return the outside media guide, close the bracket, and hook the head latch. (Figure 17)



3. Close the top access door and turn on the printer or press the FEED button if the printer is already on. The printer will then feed the labels through the cutter automatically. (Figure 18)



Note: The FEED button does not make the printer cut. For cutting to occur when the panel setting is properly enabled.

PAL™ Print and Program Overview

Printers featuring PAL™ Print and Program ability can be used in several ways in any given environment. This section describes 3 common ways this advanced capability is used. For help and assistance determining the best way to use this ability in your situation, please consult your sales representative.

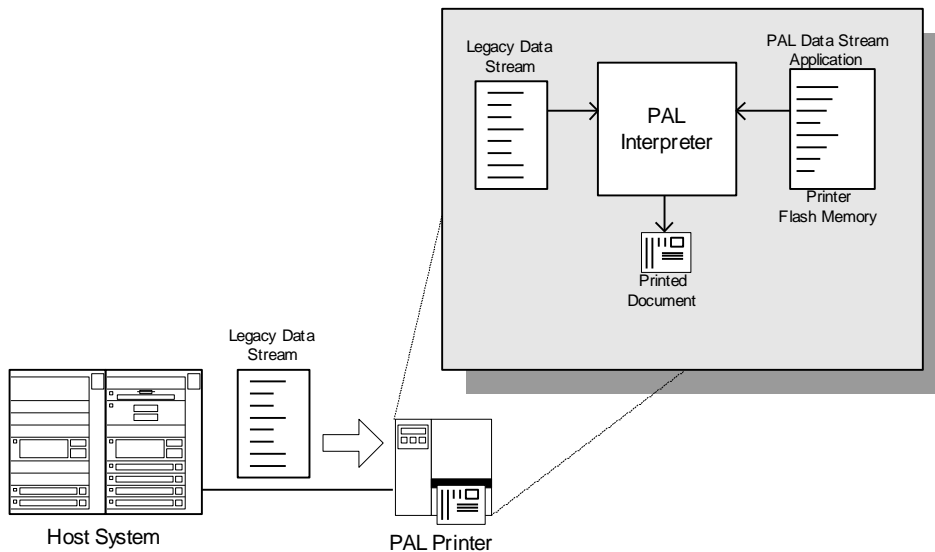
Traditional Printing

This environment represents the most common use of printers. Generally a single print job (PAL™ print sequences) generates a single label. In this role the PAL™ Print and Program interpreter accepts the print job, performs the required operator processing and prints the; label, tag, or ticket. Using a Windows driver in conjunction with a Windows application program is a typical way to print in this environment. Alternatively, PAL™ print sequences may also be generated by any host application written to take advantage of this powerful language. When a PAL™ capable printer is used this way, no special “PAL™ program” must be loaded on the printer. Print sequences generated by a Windows driver or host program are simply sent to the printer resulting in print output just like traditional printers.

Legacy Data Stream Interpretation

PAL™ Print and Program capable printers uniquely address applications where upgrading to modern cost effective technology is desired. Often cost-prohibitive software reprogramming to change a data stream prevents an organization from moving to new printing technologies.

Using a PAL™ Print and Program capable printer solves this problem. In this case a PAL™ program is written which interprets a data stream normally sent to the legacy device being replaced. This program is stored on the printer and is automatically executed each time the printer is powered on. This program is able to produce a new label format based on this legacy data. Even though the host computer is sending the exact same legacy data to the printer, the label format can be completely different. For example the new format may include bar codes, scaled and/or rotated fonts, lines, logo's etc. Even though the legacy device being replaced does not support these print abilities, the new label format can. For example, text only outputs such as produced by a dot-matrix printer or card embosser may now be presented in a more functional format. Information in the data stream can be reformatted into any size font in any rotation, or even printed as bar code. This example demonstrates how PAL™ Print and Program capable



printer can replace a legacy print device with no host software changes required.

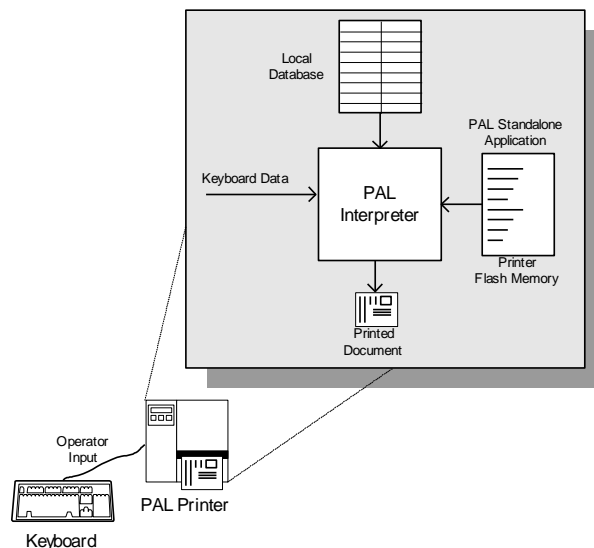
Standalone/Downtime Applications

PAL™ Print and Program capable printers may be programmed to operate independent of a PC/host connection. This standalone ability may be used in cases where no PC/host connection is needed or as a fail-safe backup when the PC/host or network is unavailable.

The Standalone Application program is stored in the printer memory and can accept input from a PS/2 keyboard, bar code scanner, or other serial devices such as an electronic scale. These programs may use the printer's LCD to prompt for user input and may also include databases. Unlike other bar code printers that allow basic static forms to be loaded in the printer, PAL™ Print and Program capable printers provide advanced abilities. Examples of these advanced capabilities are:

- ❑ Ability to operate on line from host or off line in stand-alone mode
- ❑ Ability to range check user input
- ❑ Ability to combine data from multiple fields into a single bar code
- ❑ Ability to access database stored in printer
- ❑ Ability to perform math calculations (addition, subtraction, multiplication, division, etc.)
- ❑ Ability to perform logical calculations (equal to, less than, greater than, etc.)

Shown below is an example where a stand-alone PAL™ application and database is stored in the printer. Operator input combined with internal database information is used to create a label. For example, this application could request a part number and physical dimensions of a particular part by prompting for this information on the printer LCD. After the operator inputs the requested



information on the PS/2 keyboard, the printer could calculate the volume, and then based on the part number lookup the part description in a database to produce a label.

Calibration & Configuration

This section discusses calibration, printing configuration and resetting the printer to factory defaults.

Performing Calibration

After the media is loaded, please perform media calibration to calibrate the label sensor in advance.

1. Turn off the printer
2. Press and hold the PAUSE button and turn on the power.
3. When “CALIBRATION ...” is displayed on the LCD , and both READY and MEDIA indicators blink, release the PAUSE button.

NOTE: Printers with Ethernet will take 20 second for this process, the PAUSE button must be pressed during that period.

4. The printer feeds 12-inches of blank labels.
5. When “READY” is displayed, the READY and MEDIA indicators stop blinking but remain illuminated.

Important! It's recommended to perform media calibration after changing media. Failure to do so could result in improper detection by the label sensor.

Printing a Configuration Report

To perform a self-test and print a configuration report:

1. Turn off the printer.
2. Press and hold the FEED button while turning on the power.
3. When “SELF-TESTING ...” is displayed on the LCD and the READY indicator blinks, release the FEED button.

NOTE: Printers with Ethernet will take 20 second for this process, the PAUSE button must be pressed during that period.

4. The printer prints out a configuration report.
5. When “READY” is displayed on the LCD , the READY indicator stops blinking but remains illuminated.
6. The following information is printed in the report:
 - Font list
 - Hardware configuration and status
 - Label parameters
 - Firmware version

Notes:

After the self-test the printer enters the diagnosis mode (Dump mode). To continue to normal operation, press CANCEL button to cancel the diagnosis mod (Dump mode).

Resetting to Factory Default Settings

To reset the printer to factory default settings:

1. Turn off the printer.
2. Press and hold the CANCEL button and turn on the printer.
3. When “E2PROM RESET ...” is displayed on the LCD and the READY indicator blinks, release the CANCEL button.

NOTE: Printers with Ethernet will take 20 second for this process, the PAUSE button must be pressed during that period.

4. When “READY” is displayed on the LCD, the READY indicator stops blinking but remains illuminated.
5. When the two indicators relight, release the feed button.
6. The following information is printed in the report:
 - Label parameters
 - Heat (Darkness)
 - Speed
 - Symbol set (language)
 - Others for specific emulation

Notes:

1. *All settings stored in FLASH memory are retained even after turning off the printer.*
2. *You must perform the calibration for label sensitivity after you reset.*
3. *Printed label count is not reset.*

Computer Connections

This printer comes with USB interface, a standard Centronics parallel interface, and a nine-pin Electronics Industries Association (EIA) RS-232 serial data interface.

USB Interface Requirements

The Universal Serial Bus (USB) interface is version 2.0 and 1.1 compliant and provides a full-speed (12Mb/s) interface that is compatible with your existing PC hardware. The USB's "plug and play" design makes installation easy. Multiple printers can share a single USB port/hub.

Centronics Parallel Port

You can connect the printer to the host computer's parallel port using any standard Centronics cable. The required cable must have a standard 36-pin parallel connector on one end, which is plugged into the parallel port located on the back of the printer. The other end of the parallel interface cable connects to the printer connector at the host computer. For pin-out information, please refer to the Technical Reference in this manual.

Serial (RS-232) Port

The required cable must have a nine-pin "D" type male connector on one end, which is plugged into the mating serial port located on the back of the printer. The other end of the cable connects to a serial port on the host computer. For technical and pin-out information, please refer to the Technical Reference in this manual.

Note:

- 1. Centronics allows a much higher communication speed than serial.*
- 2. The pin assignment of serial cable is different from PC.*

*Please contact your local reseller if you need
this cable.*

Ethernet 10/100 Internal Printer Server Option

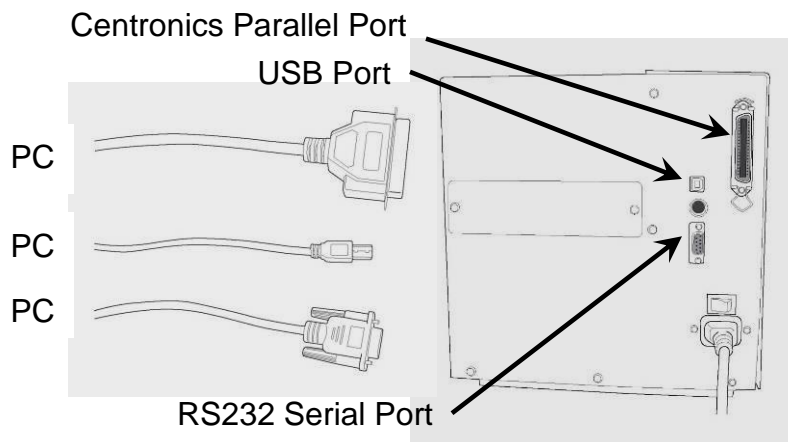
This connector is for Ethernet application; it is convenient to use several printers by Ethernet connector at the same time.

Note:

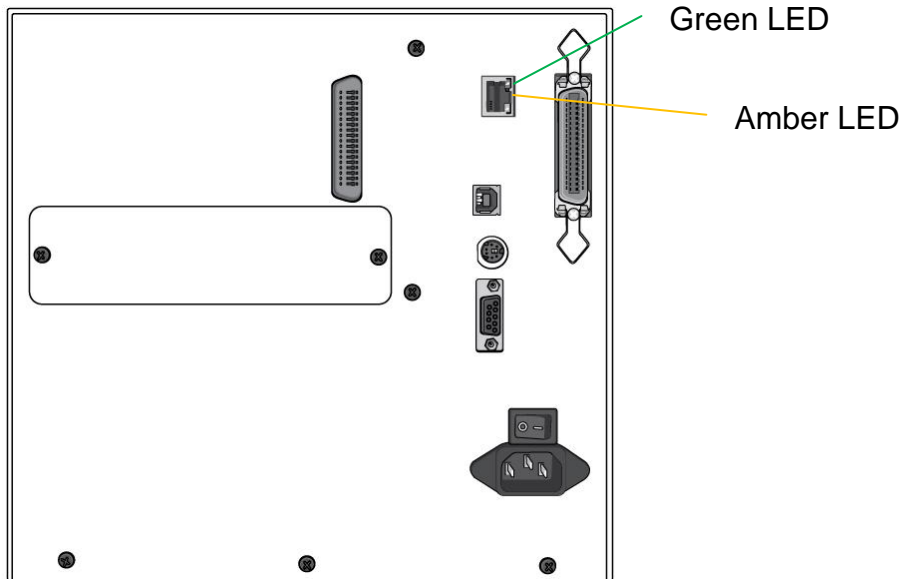
When using Ethernet model printer, please wait till the Ready Indicator to stop blinking, before starting printer operations.

Ethernet Module Status Indicators

LED Status	Description	
Both Off	No Ethernet link detected.	
Blinking	The printer waits for printer ready. It will take about 20 seconds to be ready.	
Green	Speed LED	On: 100 Mbps link Off: 10 Mbps link
Amber	Link/Activity LED	On: link up Off: link down Flash: activity



Ethernet LED Indicators



Communicating with the Printer

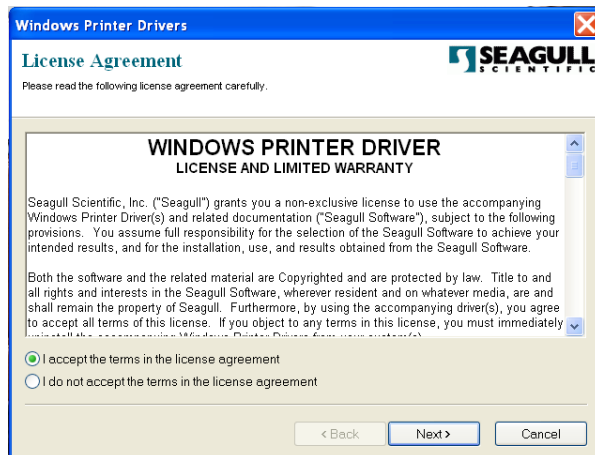
The bundled printer driver can be applied to all applications under Windows 2000/ 2003/ XP/ Vista/ Windows 7, supporting 32-bit/ 64-bit operation systems. With this driver you can operate any popular Windows software applications including Bartender editing software or MS Word, etc., to print to this printer.

The screens included for these steps are taken from Windows XP; steps in other versions of operation systems are similar.

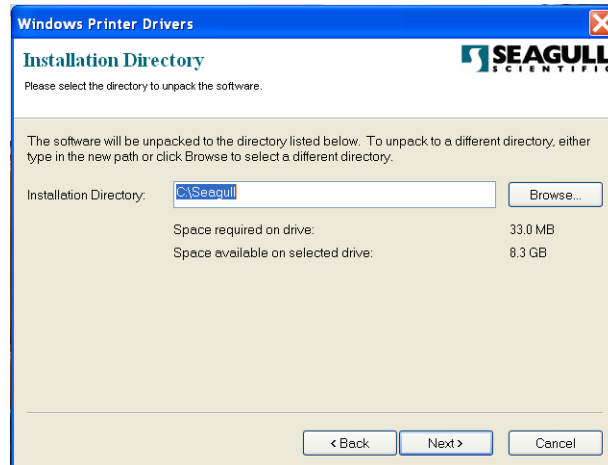
Note:

We strongly recommend that you use the Seagull Driver Wizard instead of the Microsoft Windows Add Printer Wizard when installing and updating your Drivers by Seagull. (Even though the "Add Printer Wizard" is from Microsoft, it too easily performs a number of tasks incorrectly when updating existing drivers. It also badly handles the situation where a printer driver is already in use by a Windows application.)

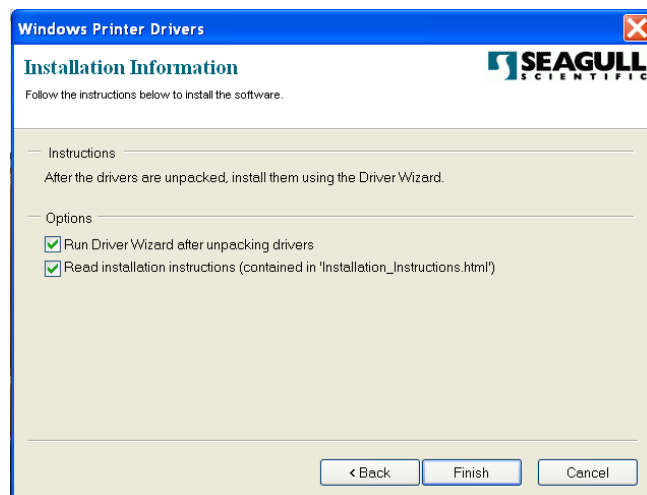
1. Turn off the printer. Plug the power cable into the power socket on the wall, and then connect the other end of the cable to printer's power socket.
Connect an interface cable (i.e USB, Parallel or Serial) from the printer to the PC.
2. Turn on the printer. If the printer supports Plug-and-Play, and you have successfully connected it using a USB cable, then the Windows Add Hardware Wizard will automatically detect the printer and display a dialog that allows you to install a driver. Click **Cancel** and do not install the driver using the Windows Add Hardware Wizard. Instead use the Seagull Driver Installation Wizard provided on the CD ROM received with your printer.
3. Utilizing the CD ROM from your printer package, select and start the Seagull Driver Wizard.
4. On the prompt, Windows Printer Driver, select "I accept..." and click "Next".



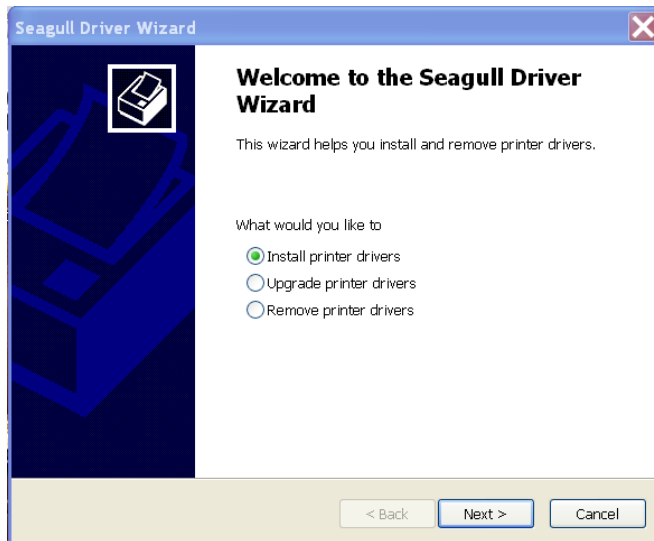
5. Assign the directory to keep Seagull driver, (for example: C:\Seagull) and click "Next".



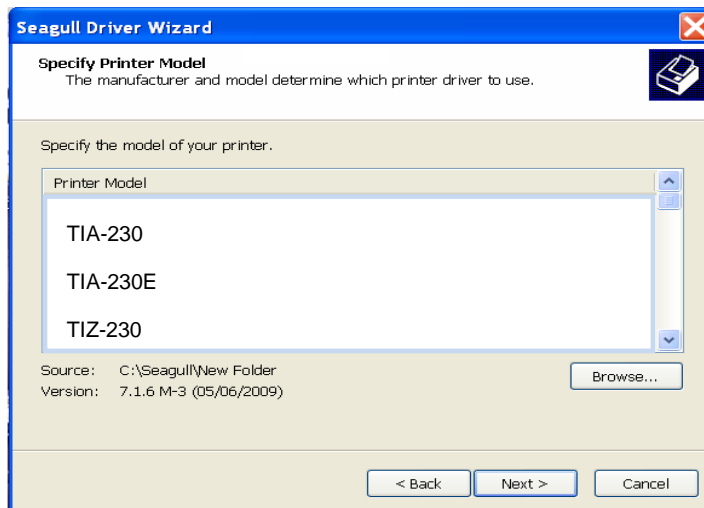
6. Click "Finish".



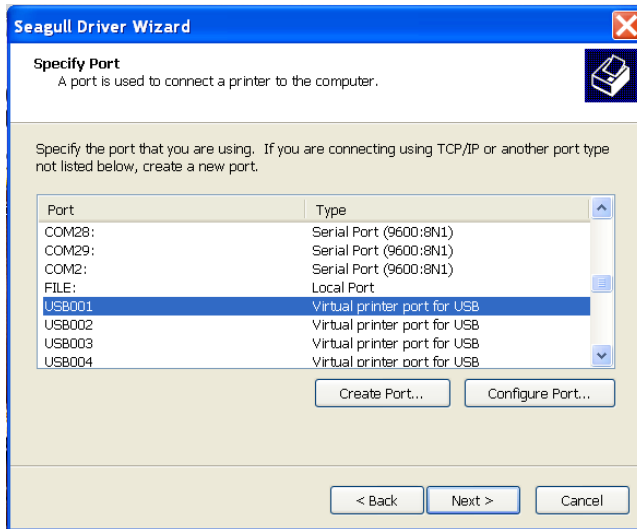
7. Select Install printer drivers and Click "Next"



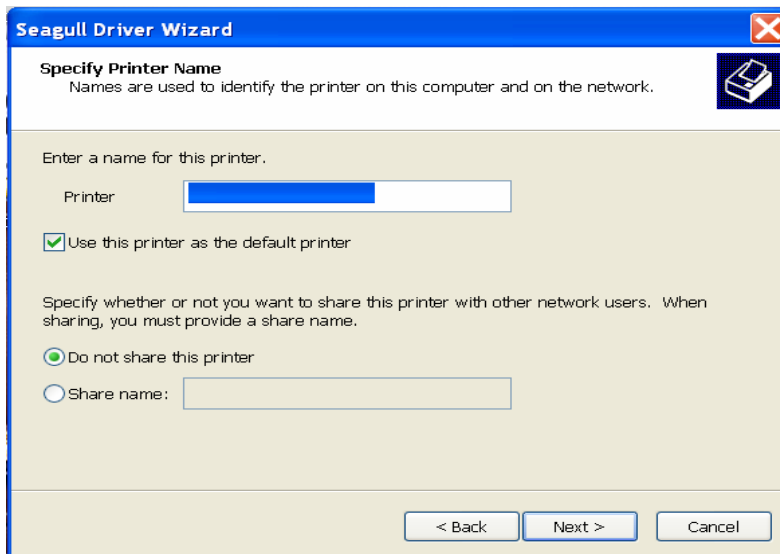
8. Select model & emulation :



9. Select the port of the printer and click "Next".



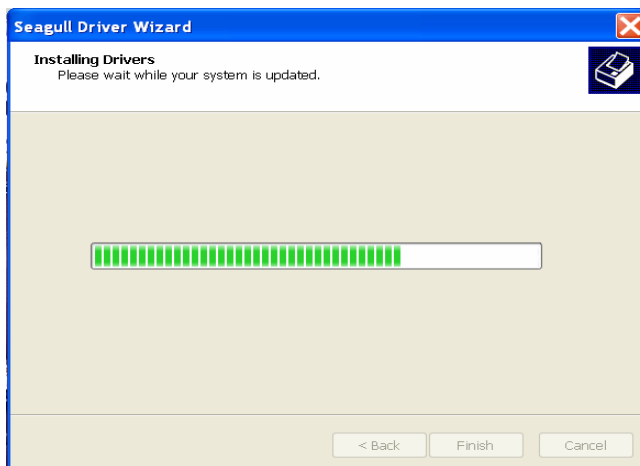
10. Enter Printer name and select "do not share this printer", and click "Next".



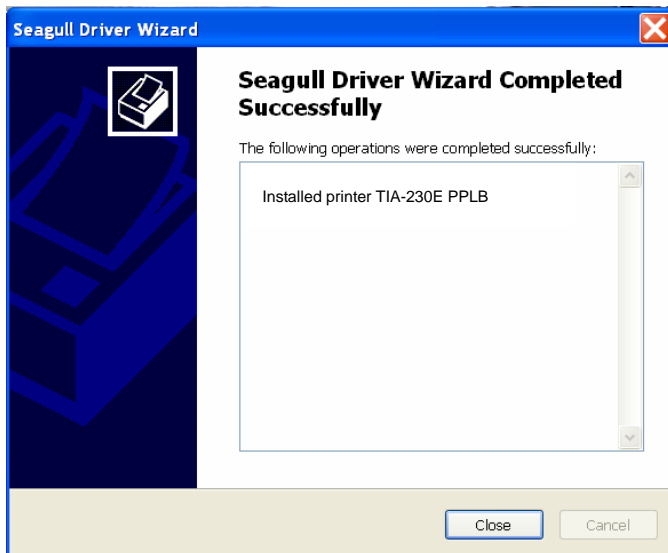
11. Check all the data on the showing screen, if it is correct, click "Finish".



12. After the related files have been copied to your system, click "Finish".



13. After driver installation is complete, click "Close". The driver should now be installed.



Troubleshooting

Normally, if the printer is not working properly, the "READY" LED blinks continuously, and printing and communication between the host and printer stops.

LED and LCD Diagnosis

Blinking LEDs indicate a problem. Check the LEDs and the LCD display and refer to the following solutions:

Media Problems

LED/LCD	Indication
READY and MEDIA LEDs	Blinking
LCD Display	MEDIA OUT

Possible Problems	Solutions	Remarks
Mis-detected gap	Check the media path Check the position of the label sensor	For continuous media, check application and driver, and select continuous media.
Media out	Supply the media roll	
Media not installed	Install the media roll	
Media jam	Recover the jam	

Note: If problem continues perform a label sensor calibration.

Ribbon Problems

LED/LCD	Indication
READY and RIBBON LEDs	Blinking
LCD Display	RIBBON OUT

Possible Problems	Solutions	Remarks
Ribbon out	Supply the ribbon roll	Not applicable to direct thermal.
Ribbon jam	Recover the jam	
Ribbon sensor error	Replace ribbon sensor	

Note: If you use direct thermal, set with panel, Windows driver or command.

Other Problems

LED	Indication
READY LED	Blinking

Problems	Solutions	Remarks
Serial IO error	Check the baud rate, format or protocol between host and printer	Not for Centronics
Cutter failed	<ul style="list-style-type: none"> • Check the media. • Check the connection between cutter and main board. • Call for service. 	
Memory full	Check graphics and soft fonts from host. Delete by application software for those no longer in use.	Need to reboot the system.

Note: After problem is solved, press CANCEL to continue printing

Light /Missing Print

Print quality can be adjusted when light or missing print is primarily observed on the right or left side of the media.



Figure 1

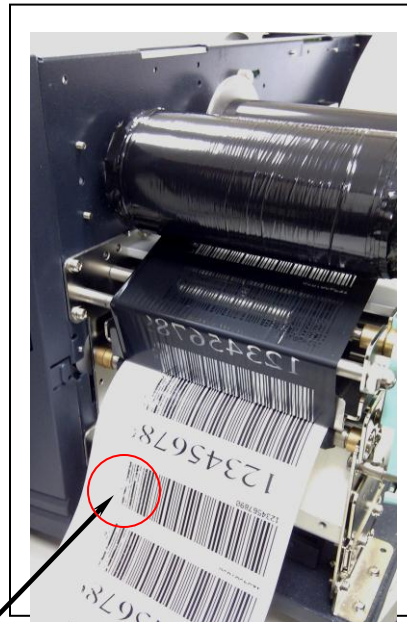
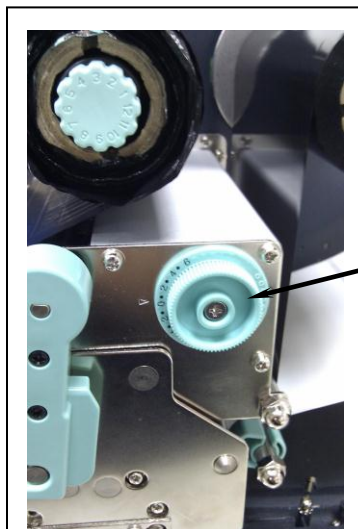


Figure 2

Light/Missing Print

If the print discrepancy is as shown in Fig. 1, turn the Fine Adjustment Knob clockwise one setting (adjust counter clockwise for Fig. 2 correction), then try printing again to justify the print quality improvement. Repeat the same process until the print quality is well balanced on both sides of the label.



Fine Adjustment
Knob

Figure #1, Light Print Correction
Adjust Clockwise

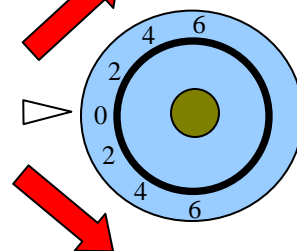


Figure #2, Light Print Correction
Adjust Counter Clockwise

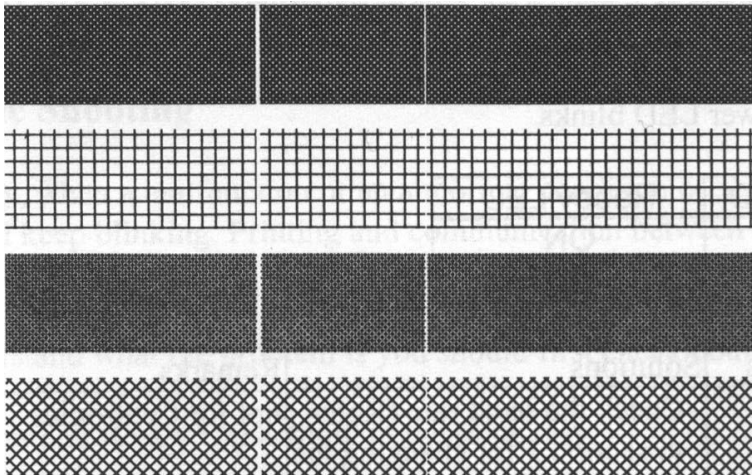
Miscellaneous

If the host shows "Printer Time out"

1. Check if the communication cable (parallel or serial) is connected securely to your parallel or serial port on the PC and to the connector on the printer at the other end.
2. Check if the printer power is turned on.

If the data has been sent, but there is no output from the printer. Check the active printer driver, and see if Seagull Driver for your Windows system and the label printer has been selected.

Vertical streaks in the printout usually indicate a dirty or faulty print head. (Refer to the following examples.) Clean the print head. If the problem persists, replace the print head.



For unstable ribbon roll rotation, check the label path and make sure the head latch is securely closed.

Poor printout quality:

- The ribbon may not be qualified.
- The media may not be qualified.
- Adjust the Darkness (heat temperature).
- Slow down the print speed.
- Refer to the following and clean the related spare parts.

Recovery

After correcting problems, simply press the CANCEL button or restart the printer. Make sure the LED's are not blinking and remember to resend your files.

Caring for Your Printer

Clean the following components of the printer using a cotton bud dampened with alcohol. Do not soak the cotton bud excessively.

Note: Turn off the printer before cleaning.

Cleaning the Print Head

Clean the print head as follows

1. Turn off the printer.
2. Open the top cover to access the print head module
3. Remove the ribbon.
4. Rub the print head with a cotton bud moistened with alcohol.
5. Check for any traces of black coloring or adhesive on the cotton after cleaning.
6. Repeat if necessary until the cotton is clean after it is passed over the head.

Note: Clean the print head every time the ribbon is replaced or more often depending on actual usage and conditions.

Cleaning the Roller

Using a cotton bud moistened with alcohol, clean the roll and remove any attached glue.

Note: Clean the roller after it has been in contact with foreign materials such as dust or adhesives.

Cleaning the Media Compartment

Clean the media compartment with a cotton bud that has been moistened with a mild detergent. Every time a media roll is printed, you should clean this compartment to reduce the incidence dust.

Technical Reference

General Specifications

	FM4602 PLUS / IE		FM4603 PLUS
Printing Method	Direct Thermal and Thermal Transfer		
Printing Resolution	203 dpi (8 dots/.04")		300 dpi (12dots/.04")
Printing Width	Max 4.09"		
Printing Length	Max. 50"	Max. 100"	Max. 50"
Printing Speed	2 ~ 6 ips		1 ~ up to 5 ips
Memory	8MB DRAM (7MB User Available) 4MB Flash ROM (3MB User Available)	16 MB DRAM (13MB User Available) 8MBFlash ROM (6MB User Available)	
CPU Type	32 bit RISC CPU		
Media Sensors	Reflective & See-through (movable)		

Display	LED indicator x 3	LED indicator x 3, Back-lit LCD Display 16 x 2-line, Multilingual
Communication interfaces	Centronics parallel, RS-232 serial, USB	Centronics parallel, RS-232 serial, USB, PS/2 keyboard Ethernet (4602 IE / 4603 IE)
Maximum Label Roll Diameter	8"(203mm) OD on a 3"(76mm) ID core 7"(178mm) OD on a 1.5"(38mm) ID core	
Media Types	Roll-feed, die-cut, continuous, fan-fold, tags, ticket in thermal paper or plain paper, fabric labels	
Ribbon	Wax, Wax/Resin, Resin (ribbon wound ink-side out or ink-side in available)	
Ribbon Size	Ribbon width: 1"~4"(25.4 mm~101.6 mm) Ribbon Length: max 360m Wax, 300m Semi-Resin Ribbon roll max OD 2.75"(70mm) Core size ID 1"(25.4 mm)	
Compact Size	W9.8" x L16.5" x H10.4"	
Weight	24lbs(11kgs)	
Power Source	100~240 VAC, 50/60 Hz, internal universal power supply	

Agency Listing	CE, UL, CUL, FCC class A	
Operating Temperature	40°F~100°F (4°C~38°C)	
Storage Temperature	-4°F~122°F (-20°C~50°C)	
Driver Operating Systems	Win 2000/ 2003/ XP/ Vista/ Windows 7	
Printer Languages	PPLA, PPLB PAL/PPLZ	
Real Time Clock (RTC)	optional	standard
Options and Accessories	Cutter Dispenser Rewinder Media Stacker Standalone KDU: ArgoKee RTC Font card	Cutter Dispenser Rewinder Media Stacker Standalone KDU: ArgoKee

Fonts, Bar Codes and Graphics Specification

The specifications of fonts, bar codes and graphics depends on the printer emulation. The emulation is a printer programming language through which the host can communicate with your printer. There are three printer programming languages, PPLA, PPLB and PAL/PPLZ.

Printer Programming Language A, PPLA

Specification	4600 PLUS Series
General Fonts	7 alpha-numeric fonts, OCR A and OCR B
ASD Smooth Fonts	4, 6, 8, 10, 12, 14, and 18 points
Symbol Sets (Code Pages)	USASCII, UK, German, French, Italian, Spanish, Swedish and Danish/Norwegian
Courier Fonts	8 symbol sets (PC, PC-A, PC-B, EAMA-94, Roman, Legal, Greek and Russian)
Soft Fonts	Downloadable PCL fonts
Font Expandability	1x1 to 24x24
Bar Code Types	Code 39 , Code 93, Interleaved 2of 5 (standard/with checksum digit/with human readable check digit), EAN-8, EAN-13,UPC-A, UPC-E, Postnet, Codabar, Code 128 subset A/B/C, UCC/EAN-128, UCC/EAN-128 K-MART, UCC/EAN-128 Random Weight, Plessey, HBIC, Telepen, FIM, UPC2, UPC5, GS1 Data Bar
Graphics	PCX, BMP, IMG, and HEX formats
Stand-alone Operation	ArgoKee

Printer Programming Language B, PPLB

Specification	4600 PLUS Series
General Fonts	5 fonts with different point sizes
Symbol Sets (Code Pages)	8 bits: code page 437, 850, 852, 860, 863, and 865 7 bits: USA, British, German, French, Danish, Italian, Spanish, Swedish and Swiss.
Soft Fonts	Downloadable soft fonts
Font Expandability	1x1 to 24x24
Bar Code Types	Code 39(checksum), Code 93, Codabar, Interleave 2 of 5(checksum), Matrix 25, UPC A/E 2 and 5 add-on, EAN-8/13, Code 128UCC, UCC/EAN, Postnet, German Postcode. MaxiCode and PDF417 (2D symbologies)
Graphics	PCX and binary raster
Stand-alone Operation	connect with PC keyboard or barcode reader (PS/2 interface)

Notes:

1. *Since the font board and flash modules use the same connector, they cannot function at the same time.*
2. *All printer models connect to the ArgoKee through the RS-232 serial port.*
3. *Only 4602 PLUS and 4603 PLUS can connect to a PC keyboard through a PS/2 port.*

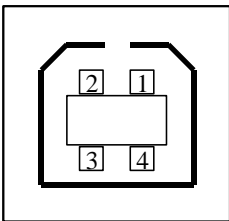
Printer Programming Language Z, PPLZ

Specification	4600 PLUS Series
General Fonts	10 resident fonts (9 bitmapped fonts and 1 scalable fonts)
International Character Sets	14 international character sets: USA, USA2, UK, Holland, Den / Nor, Swe / Fin, German, France1, France2, Italy, Spain, Misc., Japan, page 850.
Soft Fonts	Downloadable soft fonts
Bitmapped Font Expandability	1x1 to 24x24
Bar Code Types	One-Dimension barcode: Code 11, Interleaved 2 or 5 (standard, industrial) , Code 39, Code 128 (A, B&C), Codabar, Logmars, MSI, UPC/EAN extension EAN-8, EAN-13, UPC-A, UPC-E and PostNet Two-Dimension barcode: PDF-417, MaxiCode, Data Matrix (ECC200 only), QR Code
Graphics	HEX and binary graphics with normal as well as compressed image

Interface Specifications

This section presents the interface specifications of IO ports for the printer. These include pin assignments, protocols and detailed information about how to properly interface your printer with your host or terminal.

USB



USB series "B" Receptacle Interface

Pin	Signal Name
1	VBUS
2	D -
3	D+
4	GND

Connector Terminal Pin Assignment

Serial Interface

The RS-232 connector on the printer side is a female, DB-9.









Pin	Direction	Definition
1	In	DSR
2	In	RxData
3	Out	TxDData
5	-	Ground
6	Out	DTR
7	Out	RTS
8	In	CTS
9	Out	+5V

Note: Pin 9 is reserved for a KDU (keyboard device unit). Do not connect this pin if you use a general host such as a PC

Connection with Host:

Host 25S	Printer 9P	Host 9S	Printer 9P
(PC or compatible)		(PC or compatible)	
DTR 20	1 DSR	DTR 4	1 DSR
DSR 6	6 DTR	DSR 6	6 DTR
TX 2	2 RX	TX 3	2 RX
RX 3	3 TX	RX 2	3 TX
CTS 5	7 RTS	CTS 8	7 RTS
RTS 4	8 CTR	RTS 7	8 CTS
GND 7	5 GND	GND 5	5 GND

Alternatively you can connect the 3 wires as follows:

Host 25S	Printer 9P	Host 9S	Printer 9P
(PC or compatible)		(PC or compatible)	
TX 2	2 RX	TX 3	2 RX
RX 3	3 TX	RX 2	3 TX
GND 7	5 GND	GND 5	5 GND
pin 4 		pin 4 	
pin 5 		pin 6 	
pin 6 		pin 7 	
pin 20 		pin 8 	

The simplest way to connect to other hosts (not PC compatible) or terminals is:

Printer		Terminal/Host
Pin 2- RxData	.....	TxDATA
Pin 3- TxData	.....	RxDATA
Pin 5- Ground	.....	Ground

In general, as long as the data quantity is not too large and you use Xon/Xoff as flow control, it will be problem free.

Baud rate: 1200, 2400, 4800, 9600(default), 19200, 38400, 57600,115200
bauds. (Programmable by command)

Data format: always 8 data bits, 1 start bit and 1 stop bit.

Parity: always non parity

Handshaking: XON/XOFF as well as CTS/RTS (hardware flow control).

If you run an application with the bundled printer driver under Windows and use the serial port, you should check the above parameters and set the flow control to "Xon/Xoff "or "hardware".

Parallel (Centronics)

The parallel port is a standard 36-pin Centronics connector. Pin assignments are as follows:

Pin	Direction	Definition	Pin	Direction	Definition
1	In	/STROBE	13	Out	SELECT
2	In	Data1	14,15		NC
3	In	Data 2	16	-	Ground
4	In	Data3	17	-	Ground
5	In	Data4	18		
6	In	Data5	19~30	-	Ground
7	In	Data6	31		NC
8	In	Data7	32	Out	/Fault
9	In	Data8	33~36	-	NC
10	Out	/ACK			
11t	Out	BUSY			
12	Out	PE			

Auto Polling

Both the serial port and parallel port of this printer can be active at the same time, i.e. the printer can simultaneously communicate with two PCs via different ports. However as no port contention is made for this printer, if both PCs transmit data at the same time the data may become damaged in the receiving buffer.

Ethernet Interface

The following port complies with Ethernet communication.

Pin	Signal
1	Transmit+
2	Transmit-
3	Receive+
4	Reserved
5	Reserved
6	Receive-
7	Reserved
8	Reserved

ASCII TABLE

NUL			0	@	P	'	P
SOH	XON	!	1	A	Q	a	q
STX		"	2	B	R	b	r
	XOFF	#	3	C	S	c	s
		\$	4	D	T	d	t
	NAK	%	5	E	U	e	u
ACK		&	6	F	V	f	v
BEL		'	7	G	W	g	w
BS		(	8	H	X	h	x
		)	9	I	Y	i	y
LF		*	:	J	Z	j	z
	ESC	+	;	K	[	k	{
FF		,	<	L	\	l	l
CR		-	=	M	]	m	}
SO	RS	.	>	N	^	n	~
SI	US	/	?	O	_	o	DEL

Appendix A: Printer Status

LCD display	Blinking LED	Description
PAUSE	READY	Printer is paused. Press PAUSE or CANCEL to return to normal.
MEDIA OUT	MEDIA READY	Media is uninstalled or used up. Load new media to the printer.
RIBBON OUT	RIBBON READY	Ribbon is uninstalled or end-of-ribbon occurred. Load new ribbon to the printer.
SERIAL IO ERROR	READY	Format or baud rate of RS232 communication is inconsistent between printer and host.
CUTTER FAILED	READY	Cutter cannot cut off the media, check media and cutter.
MEMORY FULL	READY	Printer buffer full due to loaded soft fonts, graphics or forms. Check data format. Call for service.
HEAD OPEN	READY	Print head latch is not closed. To print label the head latch must be closed.
P. SENSOR O.R.	READY	Media sensor is out of range during calibration. Make sure the media is installed and the label sensor is under the media.
TPH TOO HOT	MEDIA	Printing job will start until the temperature of TPH goes down.

Appendix B: Stand-alone Keyboard and Barcode Reader

This appendix covers stand-alone operation with keyboard or barcode reader.

Keyboard

To use the printer in stand-alone operation with a keyboard follow the procedure described below:

1. Make a form for the keyboard. (The form should include “ZS” command to store to flash memory. Refer to the following command sample.)
2. Turn on the printer; download the form from PC to printer.
3. Turn off the printer.
4. Connect the keyboard to the keyboard interface.
5. Turn on the printer.
6. Check LCD for instructions of each data string/ label count/ copies; type to input data accordingly.

Form Control Functions

Key	Function
Esc	Enter or exit from keyboard mode
Backspace	Delete the last typed character
F1	Next form if more than one form exists
Enter	- Select the form - End of typed data

Example: Making a Keyboard Form

1. Make a command file for the form, KBD.FRM.

Command	Description
ZS	Enable store to flash
FK"KBDFORM"	Delete previous one
FS"KBDFORM"	Start of form
V00,15,N,"Product Name ?"	Variable and display message Counter and display message
C0,10,N,+1,"Product No. ?"	Label dimension
Q50,24	Label width
q816	Speed
S2	Darkness
D8	Print from top
ZT	Fixed data
A550,20,0,4,1,1,R,"ABC COMPANY"	Barcode I25 for counter
B550,60,0,2,2,4,40,B,C0	Print the input product
A540,150,0,3,1,1,N,V00	End of form
FE	Disable store to flash
ZN	

2. Send the file, KBD.FRM to printer under MS-DOS
>COPY/B KBD.FRM LPT1:

3. Turn off the printer, connect the keyboard and then turn on the printer. The LCD displays this message:

READY (203,PPLB)
<ESC> FOR KEYBD

4. Press <ESC> to enter the keyboard mode and the form name appears.
Press <ENTER> to select the form.

KBDFORM
↵

5. Key-in the product name and number.

Product Name ?
Barcode Printer.↵

Product No. ?
0123456789.↵

6. Input the label count and copy count.

LABEL SET NO. ?
2.↵

COPIES PER LAB ?
3.↵

7. Press <ENTER> to continue to the next label and repeat steps 5 ~ 7, or <ESC> to exit.

ENTER to go on,
Or ESC to return

Output

ABC COMPANY



0123456789

Barcode Print

ABC COMPANY



0123456789

Barcode Print

ABC COMPANY



0123456789

Barcode Print

ABC COMPANY

0123456790
Barcode Print

ABC COMPANY

0123456790
Barcode Print

ABC COMPANY

0123456790
Barcode Print

Barcode Reader

To use the printer in stand-alone operation with a barcode reader (scanner), follow the procedure described below

1. Make a form for barcode reader. (Note that the form name must be "READER" The form should include "ZS" command to store to flash memory.)
2. Turn on the printer; download the form from PC to printer.
3. Set the parameter of "READER INSTALLED" on the LCD to ON position.
4. Turn off the printer.
5. Connect the barcode reader to the keyboard interface.
6. Turn on the printer.
7. Check LCD for instructions of each data string and scan barcodes to input data accordingly.

Example: Making a Barcode Reader Form

1. Make a command file for a form, READER.FRM.

Command	Description
ZS	Enable store to flash
FK"READER"	Delete previous one
FS"READER"	Start of form
V00,15,N,"Product Name ?"	Variable and display message
C0,10,N,+1,"Product No. ?"	Counter and display message
Q50,24	Label dimension
q816	Label width
S2	Speed
D8	Darkness
ZT	Print from top
A550,20,0,4,1,1,R,"ABC COMPANY"	Fixed data
B550,60,0,2,2,4,40,B,C0	
A540,150,0,3,1,1,N,V00	Barcode I25 for counter
PA1	Print the input product
FE	Single copy
ZN	End of form
	Disable store to flash

2. Send the file READER.FRM to printer under MS-DOS
>COPY/B READER.FRM LPT1:
3. Turn off the printer, connect the barcode reader, set on the LCD to ON position and turn on the printer.

4. The form READER is automatically executed. Scan product name and number from printed bar codes using the barcode reader.

Product No.?
11223344.↵

Product Name?
APPLE.↵

5. A label is printed. The copy count depends on the PA command for the READER form. Step 4 is automatically repeated.

Output

ABC COMPANY



11223344

APPLE

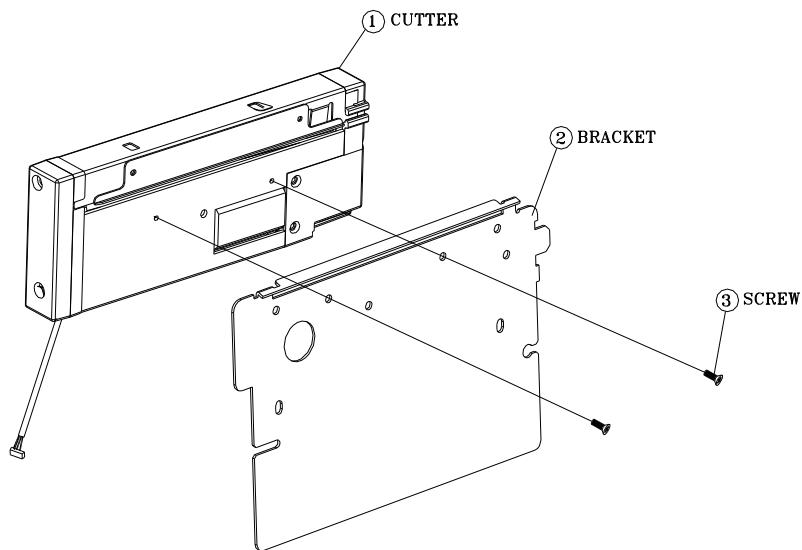
Notes:

1. To return to normal operation, press and hold the CANCEL button and turn on the printer again.
2. When using a keyboard or barcode reader communicating with a host through the Centronics or serial port is prohibited.
3. For the keyboard form the P command is not allowed, while for the barcode reader/scanner form a PA command must be included.

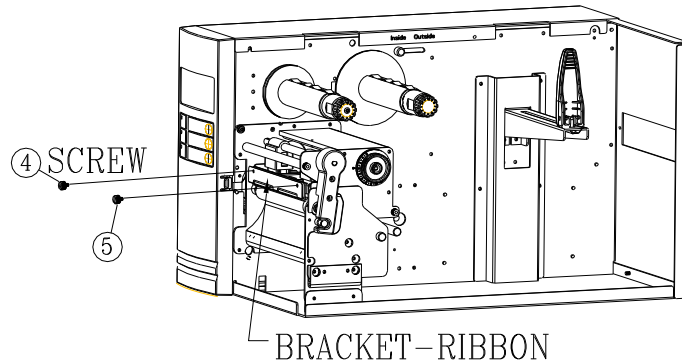
Appendix C: Cutter Installation

Refer to the following steps to install the cutter kit onto printers:

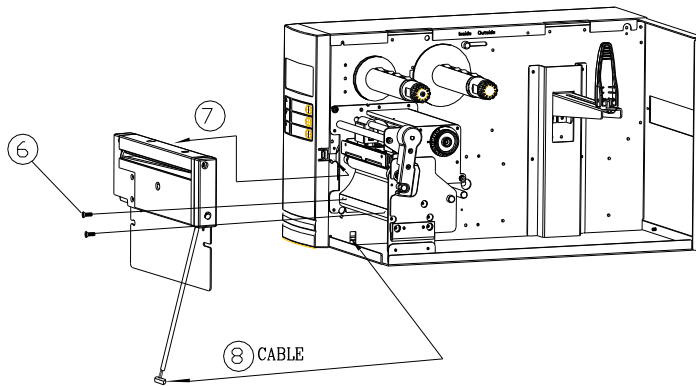
1. Turn off the printer.
2. Remove the top covers on both left and right sides.
3. Install the Cutter Baby Board to the main board JP17 socket of 4602 PLUS series / JP15 socket of 4603 PLUS series.
4. Secure the two screws for the cutter (1) and bracket (2).



5. Loosen and remove the two screws (4) from bracket (5).



6. Insert the left side of cutter bracket (7) and secure the two screws (6) to the TPH module.



7. Thread the cutter cable through hole (8) and route it to the JP16 connector (CUTTER) on the 4602 PLUS series main boards, or to the JP14 connector (CUTTER) on the main board of 4603 PLUS series.
8. Turn on the printer.
9. For the 4600 PLUS series models, set the parameter of “CUTTER INSTALLED” on the LCD to the ON position.

After the cutter is installed, install media and ribbon.

1. Put the media end on the roller.
2. Close the TPH latch.
3. Hold the PAUSE button and turn on the printer.
4. Release the button when the cutter starts cutting.
5. After cutting, the printer will feed the label for 8 inches.

Note: The procedure above is for first time installation or after cutter jam.

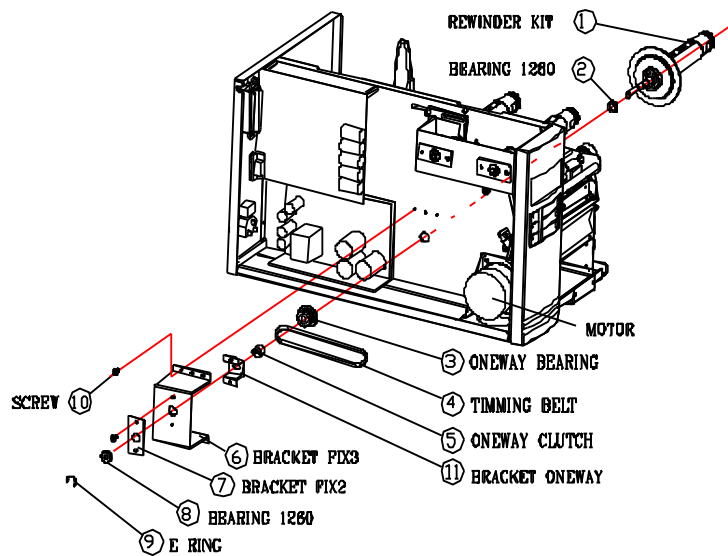
Normally the procedure for loading the media through the cutter is:

- 1. Put the media end on the roller.*
- 2. Close the TPH latch.*
- 3. Turn on the printer.*
- 4. Press the FEED button to feed the media end through the cutter.*

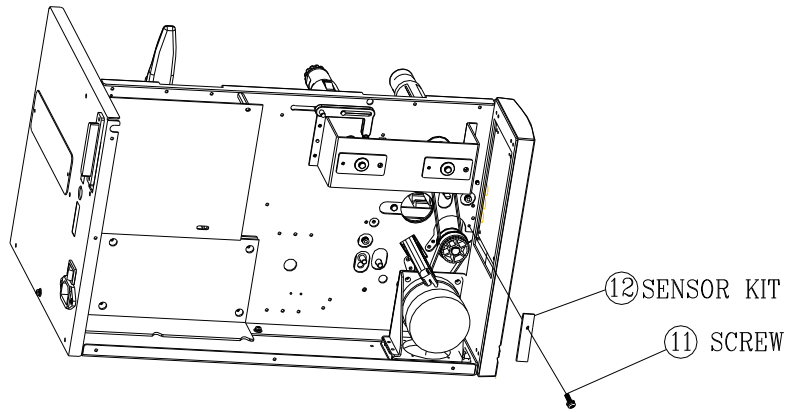
Appendix D: Dispenser Installation

Install a dispenser into the printer as follows:

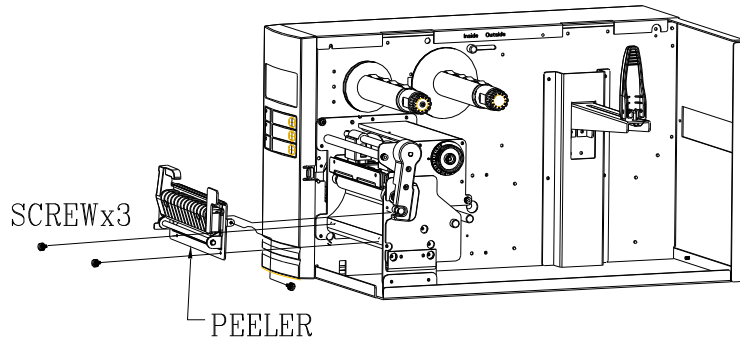
1. Turn off the printer.
2. Remove the top cover on both left and right sides.
3. Assemble the related components for both left and right sides. Check below:



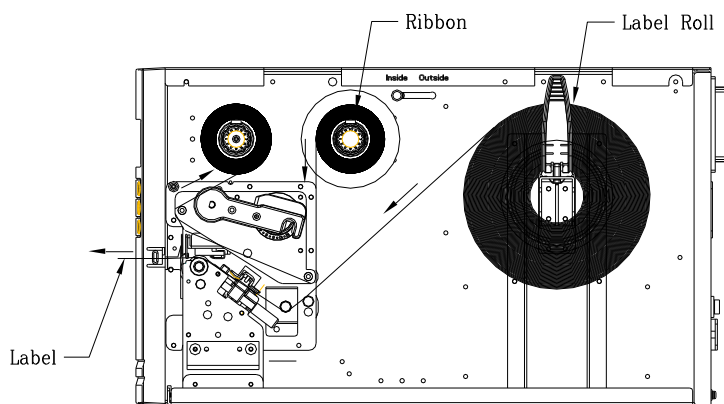
4. Connect the Peeler sensor to main board JP15 socket of 4602 PLUS series/ JP12 socket of 4603 PLUS series. Secure the dispenser board onto printer case.



5. Insert the left side of dispenser bracket and secure the three screws to the TPH module.



6. Install the ribbon and media.



7. Turn on the printer.

8. For the 4600 PLUS series models, set the parameter of “DISPENSER INSTALLED” on the LCD to the ON position.

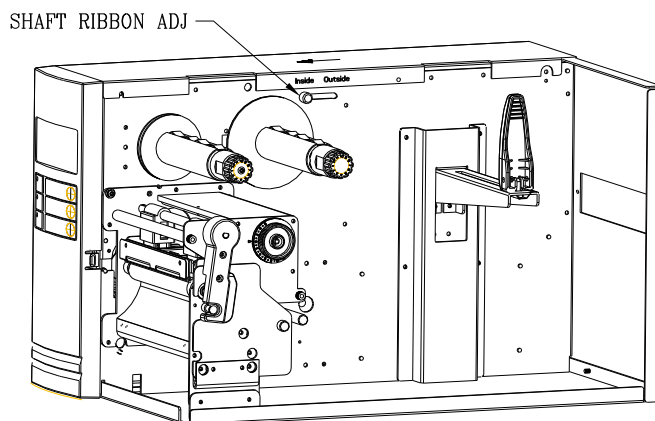
Appendix E: Adjusting Ribbon Tension

The ribbon shaft has its user-friendly feature to allow users to adjust the tension of ribbon shaft by rotating the knob. User can reset to factory default tension by adjusting the ribbon shaft while the black line was aligned to the marked arrows.

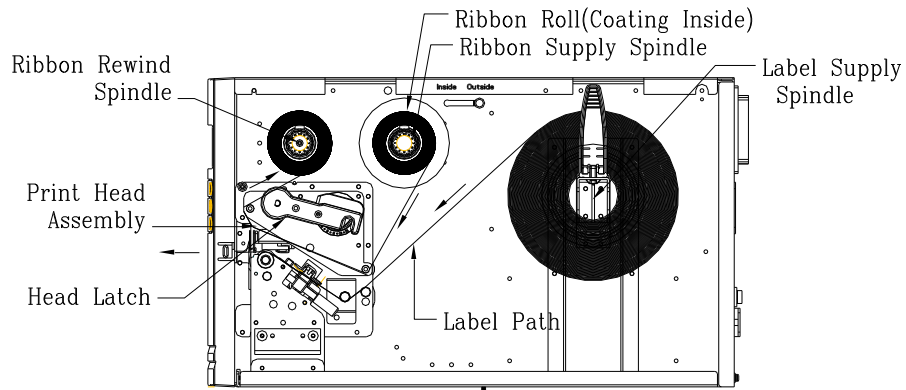
Appendix F: Switching Ribbon Wound Ink-side out or Ink-side in

The printer is produced to suit flexible applications, no matter with ribbon wound ink-side in (manufacturing default), or with ribbon wound ink-side out. The steps to switch are listed as follows:

1. Pull and move the SHAFT RIBBON ADJ into the Inside:



2. After the adjustment, ribbon wound ink-side in can be use. Then install the ribbon:



3. If ribbon wound ink-side out is in use, pull and move the SHAFT RIBBON ADJ into the Outside. Then install the ribbon:

